

August 26, 2003

VIA EXPRESS MAIL

Mr. Bob Boggs
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700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

Mr. James Ponton
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

RE: Presidio of San Francisco
Public Review of the Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4

Dear Mr. Boggs and Mr. Ponton:

Enclosed for your review is the public review version of the Draft Remedial Action Plan (RAP) for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4. Please review this document and submit your comments to me in writing by the end of the public comment period. As you know, the public comment period for the subject Draft RAP begins August 27 and ends September 26, 2003.

I appreciate your assistance in the development of this important document. Please contact me at (415) 561-4259 with any questions.

Sincerely,

Craig Cooper
Environmental Program Manager

Cc: Brian Ullenvang, NPS (1 copy)
Doug Kern, RAB (1 copy)
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DRAFT
REMEDIAL ACTION PLAN
FOR FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Prepared for:

**The Presidio Trust
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DRAFT

**REMEDIAL ACTION PLAN
FOR FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4**

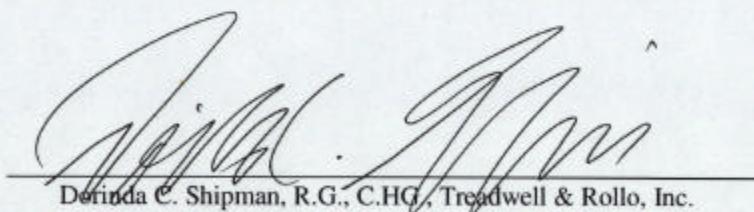
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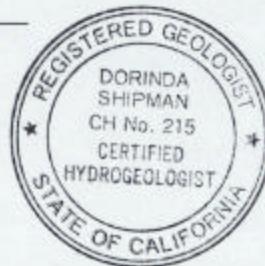
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August 2003



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26 August 2003
Date



DRAFT
REMEDIAL ACTION PLAN
FOR FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

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DRAFT
REMEDIAL ACTION PLAN
FOR FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

List of Acronyms and Abbreviations

AHPA	Archeological and Historic Preservation Act
ANL	Argonne National Laboratory
ARARs	Applicable or Relevant and Appropriate Requirements
Area A	the coastal portion of the Presidio
Area B	the non-coastal portions of the Presidio
Army	U.S. Army
ARPA	Archeological Resources Protection Act
BAAQMD	Bay Area Air Quality Management District
BBDA 3	Baker Beach Disturbed Area 3
BBDA 4	Baker Beach Disturbed Area 4
BCDC	San Francisco Bay Conservation and Development Commission
bgs	below ground surface
BHCM	Basewide Hydrogeologic Conceptual Model
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Corrective Action Plan
CEPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Cleanup Levels Document	<i>Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water</i> (October 2002)
COCs	contaminants of concern
CTR	California Toxics Rule
cy	cubic yards
CZMA	Coastal Zone Management Act
4,4-DDD	1,1,1-trichloro-2,2-di(4-chlorophenyl)ethane
4,4-DDE	1,1-dichloro-2,2-di(4-chlorophenyl)ethane
4,4-DDT	1,1-dichloro-2,2-di(4-chlorophenyl)ethene
DO	Dissolved oxygen
DTSC	California Department of Toxic Substances Control

List of Acronyms and Abbreviations (Continued)

EKI	Erler & Kalinowski, Inc.
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESSS Zone	Ecological Special Status Species Zone
FPALDR	Fuel Product Action Level Development Report
FS	<i>Revised Feasibility Study, Main Installation Sites</i> (March 2003)
FS 6	Fill Site 6
FS 6A	Fill Site 6, Portion A
FS 6B	Fill Site 6, Portion B
GGNRA	Golden Gate National Recreation Area
GMPA	<i>General Management Plan Amendment</i> (July 1994)
H&S	health & safety
HSC	Health and Safety Code
IT	International Technology Corporation, Inc.
LAMC	Letterman Army Medical Center
LUCs	land use controls
MACTEC	MACTEC Engineering and Consulting, Inc.
Main Installation Sites FS	<i>Revised Feasibility Study, Main Installation Sites</i> (March 2003)
MBTA	Migratory Bird Treaty Act
MCLs	maximum contaminant levels
MCLGs	maximum contaminant level goals
mg/kg	Milligrams per kilogram
MOA	Memorandum of Agreement
NAGPRA	Native American Graves Protection and Repatriation Act
National Register	National Register of Historic Places
NBAR	non-binding allocation of responsibility
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NPL	National Priorities List
NPS	National Park Service
NPV	net present value
OCPs	organochlorine pesticides

List of Acronyms and Abbreviations

(Continued)

O & M	operation and maintenance
Order	RWQCB Order No. 96-070
OSHA	Occupational Safety and Health Administration
OSWER	EPA Office of Solid Waste and Emergency Response
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCOCs	potential contaminants of concern
PLLW	Presidio lower low water
Presidio	<i>The Presidio of San Francisco, California</i>
PRGs	preliminary remediation goals
PRPs	potentially responsible parties
PTMP	<i>Presidio Trust Management Plan</i> (May 2002)
RAB	Restoration Advisory Board
RAOs	remedial action objectives
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RWQCB	Regional Water Quality Control Board, San Francisco Bay Region
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SVOCs	semivolatile organic compounds
SWRCB	State Water Resources Control Board
TBC	To Be Considered
TCE	trichloroethylene
TDS	total dissolved solids
THRC	Tennessee Hollow Riparian Corridor
TMV	toxicity , mobility, and volume
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel fuel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
Treadwell & Rollo	Treadwell & Rollo, Inc.
Trust	The Presidio Trust

List of Acronyms and Abbreviations
(Continued)

Trust Act	Section 103 of the Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333, 110 stat. 4097, as amended, 16 U.S.C. §460bb appendix
TSCA	Toxic Substances Control Act
QA/QC	quality assurance/quality control
USACE	United States Army Corps of Engineers
QC	quality control
UCL	upper confidence limit
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VMP	<i>Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco</i> (May 2001)
VOCs	volatile organic compounds
XRF	X-ray fluorescence
µg/L	micrograms per liter

1.0 INTRODUCTION

On behalf of The Presidio Trust (Trust), Treadwell & Rollo, Inc. (Treadwell & Rollo) has prepared this draft Remedial Action Plan (RAP) for a portion of Fill Site 6 (FS 6) called “Fill Site 6, Portion A” (or FS 6A), Baker Beach Disturbed Area 3 (BBDA 3), and Baker Beach Disturbed Area 4 (BBDA 4). These three sites are located in the Presidio of San Francisco (Figure 1). This RAP documents the selected remedial actions for FS 6A, BBDA 3, and BBDA 4 and is based on the remedies recommended for these three sites in the *Revised Feasibility Study, Main Installation Sites* (Main Installation Sites FS) (Erler & Kalinowski, Inc. (EKI), 2003).

1.1 Background

The Presidio of San Francisco (Presidio) is located at the northern tip of the San Francisco peninsula (Figure 1). The Presidio occupies approximately 1,491 acres and is bounded by San Francisco Bay on the north and the Pacific Ocean on the west. Densely populated residential areas of San Francisco border the Presidio to the south and east.

The Presidio was a U.S. Army (Army) installation from 1848 through 1994, serving as a mobilization and embarkation point during several overseas conflicts, a medical debarkation center, and a coastal defense for the San Francisco Bay area. Operations formerly performed at the Presidio were associated with maintenance and repair of vehicles, aircraft and base facilities. The Presidio also contains a number of landfills created and formerly used by the Army for the disposal of municipal waste and construction debris.

In December 1988, the Secretary of Defense’s Commission on Base Realignments and Closures recommended closure of the Presidio. Under Public Law 92-589, the Presidio was transferred to the National Park Service (NPS) on October 1, 1994 and became part of the Golden Gate National Recreational Area (GGNRA). As required by the Base Realignment and Closure Act, the Army initiated environmental studies in conjunction with the transfer of the property.

Section 103 of the Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333, 110 Stat. 4097 (Trust Act) created the Presidio Trust. The Trust is a federal government corporation established for the purpose of managing the leasing, maintenance, rehabilitation, and improvement of the non-coastal portions of the Presidio (Area B). The Trust manages Area B in accordance with the general objectives of the General Management Plan Amendment (GMPA) (NPS, 1994), section 1 of the Golden Gate National Recreation Area Act (Public law 92-589, 86 Stat. 1299, 16 USC 460bb), and the Presidio Trust Management Plan (PTMP) (Trust, 2002). The NPS retained responsibility for Area A of the Presidio (the coastal portions of the Presidio) and manages Area A in accordance with the GMPA. Figure 1 indicates the locations of Area A and Area B of the Presidio.

On May 24, 1999 the Army, the Trust, and NPS entered into a Memorandum of Agreement (MOA) governing remediation of the Presidio (US Army, Trust, and NPS, 1999). Pursuant to this MOA, the Army delegated to the Trust its authority for the remediation of contamination at the Presidio (both Areas A and B). On May 24, 1999, the Trust and NPS also signed the Area A MOA, which delegated responsibility for the environmental remediation of Area A to the Trust while NPS retained administrative responsibility (Trust and NPS, 1999).

Pursuant to the MOAs and a subsequent Consent Agreement with the California Department of Toxic Substances Control (DTSC) (DTSC, Trust, and NPS, 1999), the Trust prepared the Main Installation Sites FS (EKI, 2003). The Main Installation Sites FS evaluates remedial alternatives and identifies the preferred remedies for 36 sites including FS 6A, BBDA 3, and BBDA 4. Information from the Main Installation Sites FS regarding FS 6A, BBDA 3, and BBDA 4 that is presented in this RAP includes the following:

- Site background and history;
- Summary of previous investigations;
- Nature and extent of impacted soil and/or refuse/fill;
- Nature and extent of groundwater contamination;
- Remedial action goals and objectives for proposed land use;
- Identification of Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Consider (TBC) criteria;
- Identification and screening of remedial alternatives;
- Detailed and comparative analysis of remedial alternatives; and
- Identification of recommended alternatives.

The Trust, DTSC and the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), in consultation with the NPS, have jointly determined that FS 6A, BBDA 3, and BBDA 4 are appropriate for consideration for remedial action, and the Trust has prepared this RAP to evaluate and select the final remedies for these sites. This RAP includes the following regarding FS 6A, BBDA 3, and BBDA 4:

- Identification of site-specific ARARs and TBCs;
- Identification of site-specific cleanup levels for soil and groundwater;
- Summary of the detailed and comparative analysis of proposed remedial action alternatives;
- Rationale for the selection of the preferred remedial alternative at each site;
- Description of the selected remedy for each site;
- Description of the soil confirmation sampling program for the selected remedy for each site;

- Description of the groundwater and surface water monitoring program for the selected remedy for each site; and
- Summary of community relations activities.

1.2 Sites Included in this Remedial Action Plan

FS 6A, BBDA 3, and BBDA 4 are briefly introduced below.

1.2.1 Fill Site 6A

Based on the availability of new data associated with the Building 1065 Study Area, FS 6A has been divided into two portions, FS 6A and FS 6B (Figure 2). FS 6A addresses the portion of FS 6 bounded by Lincoln Boulevard to the south, Girard Avenue to the east, the area just west of the buildings to the west of Halleck Street, and a sidewalk between Buildings 227 and 1030 to the north. In FS 6A, polychlorinated biphenyls (PCBs) and mercury in soils above applicable cleanup levels (EKI, 2003). FS 6A is located two blocks from the northeast corner of old Presidio parade grounds on the Main Post (Figure 2). The remainder of FS 6, consisting of FS 6B, will be subject to an evaluation of the data and potential remedial action alternatives in a future decision document (EKI, 2003).

1.2.2 Baker Beach Disturbed Area 3

BBDA 3 is located along the western edge of the Presidio within the ravine south of Battery Crosby (Figure 1). The site is bordered on the west by the Pacific Ocean and on the east by Lincoln Boulevard. Battery Crosby is north of the site, and the access road for the battery off Lincoln Boulevard bisects the site (Figure 3).

1.2.3 Baker Beach Disturbed Area 4

BBDA 4 is located along the western edge of the Presidio just south of BBDA 3 (Figure 1). The site is bordered on the west by the Pacific Ocean and on the east by Lincoln Boulevard. Battery Chamberlin Road borders the site to the south (Figure 3).

1.3 Regulatory Framework

This RAP has been prepared pursuant to California Health and Safety Code (HSC) Section 25356.1 in accordance with the State of California Environmental Protection Agency (CEPA), DTSC Guidance Document No. EO-95-007-PP, *Remedial Action Plan Policy* (DTSC, 1995). The RAP is also consistent with the applicable federal requirements for the evaluation and selection of a final remedial action as outlined in *the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)*, 40 Code of Federal Regulations (CFR), Part 300.400 (U.S. Environmental Protection Agency (EPA), 1990).

This RAP for FS 6A, BBDA 3, and BBDA 4 summarizes the environmental problems posed by the conditions at each site, the alternative remedies considered for addressing those problems, and the comparative analysis of the alternatives against the required evaluation criteria. The RAP then presents the selected remedy for each site and provides the basis for the selection.

1.4 Public Participation

This Draft RAP will be made available for review and comment by the public and regulatory agencies including:

- DTSC,
- EPA,
- RWQCB,
- Department of the Interior, NPS, and
- The Presidio Restoration Advisory Board (RAB).

In accordance with DTSC Guidance Document No. EO-95-007-PP, *Remedial Action Plan (RAP) Policy* (DTSC, 1995), the Draft RAP has and will continue to be subject to public review and comment as follows:

- Early consultation and coordination of remedial action alternatives and selection decisions with the Presidio RAB, NPS and regulatory agencies.
- A minimum 30-day public comment period announced by appropriate public notice. The public comment period will be specified in the Proposed Plan and Public Notice.
- Preparation and distribution of a fact sheet (called a “Proposed Plan”) on the Draft RAP. The Proposed Plan fact sheet for this Draft RAP will be distributed prior to the start of the public comment period.
- A public meeting to present the contents of the Draft RAP. The public meeting for this Draft RAP will occur during the public comment period.
- Preparation of a responsiveness summary that responds to oral and written comments on the Draft RAP received during the public comment period. The responsiveness summary will be included as Appendix A in the Final RAP.
- Documents related to the RAP are available to the public as part of the Administrative Record, maintained at the Presidio Library at 34 Graham Street, San Francisco. The Administrative Record for this Draft RAP will be closed once the RAP is finalized and signed. The Administrative Record List is included in this Draft RAP as Appendix B.
- The California Environmental Quality Act (CEQA) requires state and local agencies to consider the environmental consequences of projects that they undertake, fund, or permit. The CEQA initial study and mitigated negative declaration on the implementation of this Draft RAP has been prepared on behalf of DTSC for DTSC’s compliance with CEQA.

The CEQA documentation will be reviewed by the DTSC and is subject to public review concurrently with the draft RAP. The CEQA documentation is included in this Draft RAP as Appendix C.

1.5 Preliminary Non-binding Allocation of Responsibility

HSC Section 25356.1(e) requires the DTSC to prepare a preliminary non-binding allocation of responsibility (NBAR) among all identifiable potentially responsible parties (PRPs).

HSC Section 25356.3(a) allows PRPs with an aggregate allocation in excess of 50 percent to convene an arbitration proceeding by submitting to binding arbitration before an arbitration panel. If PRPs with over 50 percent of the allocation convene arbitration, then any other PRP wishing to do so may also submit to binding arbitration.

The sole purpose of the NBAR is to establish which PRPs will have an aggregate allocation in excess of 50 percent and can therefore convene arbitration if they so choose. The NBAR, which is based on the evidence available to the DTSC, is not binding on anyone, including PRPs, DTSC, or the arbitration panel. If a panel is convened, its proceedings are *de novo* and do not constitute a review of the provisional allocation. The arbitration panel's allocation will be based on the panel's application of the criteria spelled out in HSC Section 25356.3(c) to the evidence produced at the arbitration hearing. Once arbitration is convened, or waived, the NBAR has no further effect, in arbitration, litigation or any other proceeding, except that both the NBAR and the arbitration panel's allocation are admissible in a court of law, pursuant to HSC Section 25356.7 for the sole purpose of showing the good faith of the parties who have discharged the arbitration panel's decision.

DTSC sets forth the following preliminary NBAR for FS 6A, BBDA 3, and BBDA 4: the Army is allocated 100 percent responsibility.

2.0 SITE BACKGROUND

This section presents the physical settings, site history, results of previous investigations, and the nature and extent of contamination for each of the three sites. All historical soil and groundwater data, along with laboratory qualifiers, are presented in Appendices D, E and F.

2.1 Presidio Geology and Hydrogeology

Tectonic activity associated with the San Francisco Bay area and the Presidio specifically, has resulted in the near-surface and surface occurrence of impermeable bedrock and irregular topography. Three groundwater basins, the Lobos Creek Groundwater Basin, the Coastal Groundwater Basin, and the Marina Groundwater Basin, have been identified at the Presidio (Figure 4). The Lobos Creek Groundwater Basin includes the Lobos Creek Groundwater Area, which incorporates Lobos Creek, the principal perennial stream at the Presidio. The Marina Groundwater Basin includes the West Valley, Northeastern, and the Crissy Field Groundwater Areas (Montgomery Watson, 1996).

Two distinct sets of water-bearing geologic units are described in the Basewide Hydrogeologic Conceptual Model (BHCM) (Montgomery Watson, 1996). The upland areas and the Crissy Field area have different water-bearing units. According to the BHCM, four sub-units of water-bearing units are present in the upland areas of the Presidio. These sub-units are the Merced Formation, the Colma Formation, West Valley Clay, and dune sand. The Merced Formation is primarily clay with low hydraulic conductivity. The Colma Formation overlies the Merced Formation and the Franciscan Formation bedrock in areas where the Merced Formation is absent, and consists of horizontally bedded, fine-grained materials. In the central portion of the Presidio, clay of unknown origin, the West Valley Clay, has been observed in a layer up to 30 feet thick overlying the Colma Formation. Dune sands are the latest continuous unit deposited across the Presidio. Dune sands generally overlie the Colma Formation, but may overlie the Franciscan, Merced, Colma, or West Valley Clay where erosion has occurred. The dune sands are generally well sorted, fine- to medium-grained, and yellow brown to light gray in color.

2.2 Fill Site 6A

The location of FS 6A is indicated in Figures 1 and 2. FS 6A is currently an open grassy field with a small cluster of trees. Several Presidio buildings, some used as leased office space and others as residences, are in close proximity to the site. Field investigations by the Trust reveal that FS 6A consists primarily of fill soil with some former building debris and building foundations. Historical maps obtained from the NPS archives indicate that a box culvert and two railroad spurs traversed the FS 6A area from north to south between four previously existing buildings that appear to have been warehouses (NPS, 1936). Figure 2 illustrates the approximate locations of the subsurface box culvert and rail spurs which are believed to still be presented.

FS 6A is located in Area B of the Presidio and therefore subject to land uses established by the PTMP (Trust, 2002) and the Vegetation Management Plan (VMP) (Trust and NPS, 2001). Based on principles contained in the PTMP and VMP and as described in the Main Installation Sites FS, FS 6A is designated as a residential human land use along with special status species ecological land use.

The Ecological Special Status Zone coincides with the Tennessee Hollow Riparian Corridor (THRC), a natural habitat restoration zone in the Presidio. The THRC is proposed to pass through the center of FS 6A, although its final alignment remains to be determined through an ongoing and separate planning and environmental review process under the National Environmental Policy Act (NEPA). Therefore, FS 6A will be remediated to the most stringent Ecological Special Status Zone standards to allow for the current uncertainty in the creek channel alignment and so as not to preclude implementation and design options in the THRC planning process. It is envisioned that the restored THRC will include a surface creek channel, which will provide adjacent freshwater plant species habitat on the embankments. The creek banks will be suitably stabilized and vegetated. On either side of the creek, the remaining portions of FS 6A will be landscaped. All future restoration and revegetation will be designed and implemented in accordance with the VMP and any applicable THRC planning documents.

As indicated on Figure 2, the Building 1065 Study Area and the 231/207 Study Area and the FS 6B site are located near the FS 6A site (MACTEC, 2003a). The cleanup actions for the Building 1065 and Building 207/231 Study Areas will be determined in an environmental cleanup decision document called a Corrective Action Plan (CAP) for petroleum and related contamination found at these sites.. The remedial actions for FS 6B will be proposed in a future remedial action plan for this site (EKI, 2003).

2.2.1 Site Geology and Hydrogeology at FS 6A

The FS 6A site is currently an open grassy field with a slight knoll and elevation ranges between 20 and 40 feet Presidio Lower Low Water (PLLW). Topography in the area of FS 6A generally slopes gently away from the top of the knoll in all directions. Surface water from FS 6A drains to San Francisco Bay via the THRC and Crissy Field marsh.

Investigation by the Army in the 1990's revealed that lithologic units in the vicinity of FS 6A consist of an upper layer of fill material, extending to an approximate depth of 15 or more feet, underlain by unconsolidated Quaternary Slope Debris and Ravine Fill and Colma Formation deposits. The fill consists largely of inert building demolition debris in a sand matrix. In 2001, the Trust dug five test pits in FS 6A to investigate the nature and extent of fill (Figure 5). Fill encountered ranged from minor debris (1 to 10% by volume) to significant sand and concrete foundations and rubble (estimated 75% compacted concrete rubble). At the bottoms of test pits LF6TP104 and LF6TP105, reinforced concrete, presumably remnants of building foundations, was encountered.

FS 6A is located within the Northeastern Groundwater Area of the Marina Groundwater Basin (Figure 4). Depth to groundwater ranges from 6 to 22 feet bgs. The groundwater flow direction in the FS 6A and surrounding areas is generally northerly towards the San Francisco Bay (Figure 6). The groundwater gradient in this area has been calculated to be approximately 0.0022 feet per foot (Treadwell & Rollo, 2003a).

2.2.2 Previous Soil Sampling Results for FS 6A

Environmental conditions at and in the vicinity of FS 6A have been described in a number of previous studies. The Army conducted a multi-phased Remedial Investigation (RI) of the Presidio from 1990 to 1997. (Dames & Moore, 1997). In 2001, the Trust undertook additional site investigation to supplement the Army's RI and to assist in selecting final remedial actions for the sites included in the Main Installation Sites FS. Soil test pit locations for the Trust's additional site investigation within the FS 6A site are shown on Figure 5. Based on these investigations, a geologic cross-section through FS 6A is shown in Figure 7.

Previous analytical results for soil testing associated with the above-mentioned investigations are presented in Tables D-1 through D-5 in Appendix D. In general, these results indicate that chemicals detected above applicable cleanup levels within FS 6A include mercury (maximum concentration of 0.49 milligrams per kilogram (mg/kg), cadmium (maximum concentration of 1.6 mg/kg), zinc (maximum concentration of 86 mg/kg), and PCB 1260 (maximum concentration of 1.4 mg/kg). Further analysis of the detections of cadmium and zinc in FS 6A have indicated that these detections may be indistinguishable from ambient background soil concentrations for these metals (EKI, 2003). A complete comparison of these soil data results with applicable cleanup levels and the selection of soil contaminants of concern (COCs) for FS 6A is provided in Section 3.4.

Soil samples were collected by the United States Army Corp of Engineers (USACE) in June through August 1996 following the removal and abandonment of underground piping associated with fuel distribution closure activities immediately south of FS 6A, along Lincoln Boulevard between Halleck and Girard Streets. Soil confirmation samples indicated that total petroleum hydrocarbons (TPH) and polycyclic aromatic hydrocarbons (PAHs) remaining in soil along the former pipeline alignment were cleaned up to less than 130 mg/kg and 5 mg/kg, respectively (International Technology Corporation, Inc. (IT), 1999).

2.2.3 Previous Groundwater Sampling Results for FS 6A

All FS 6A groundwater sampling locations including some groundwater sampling locations from surrounding areas are shown on Figure 6. These groundwater sampling locations consist of groundwater monitoring wells and piezometers installed by the Army as part of its RI or other investigations in the 1990's or the Trust during its additional site investigation in 2001. Analytical data results associated with these previous Army and Trust investigations are

presented in Appendix D in Tables D-6 through D-8. Data qualifiers for current and historic analytical data are presented in Table D-9.

Chemicals identified in groundwater above cleanup levels at and near FS 6A include zinc and selenium with maximum concentrations detected at 260 micrograms per liter ($\mu\text{g}/\text{L}$) and 6.2 $\mu\text{g}/\text{L}$, respectively. Beginning in the Second Quarter 2001 and through the Third Quarter 2002, all groundwater samples collected for metals analysis were filtered in the field with a 0.45-micron filter (Treadwell and Rollo, 2003). Beginning in the Fourth Quarter 2002, a high-capacity 0.45-micron filter was used. Based on a review of the data from these past monitoring rounds, it is likely that the use of the high-capacity filter resulted in reporting that is more representative of the actual concentrations of metals in the groundwater (Treadwell and Rollo, 2003). A complete comparison of the groundwater data results with applicable cleanup levels and the selection of groundwater COCs are presented in Section 3.4.

2.2.4 Nature and Extent of Impacts at FS 6A

As stated in Section 2.2.2, in general, soils data for FS 6A indicate that chemicals detected in soils above cleanup levels include metals (mercury, cadmium and zinc) and PCB 1260. The cadmium and zinc detections may be within ambient background concentrations for these metals in Presidio soils. Based on the Trust's 2001 trenching and other characterization and sampling results, the volume of soil impacted by PCBs and mercury above applicable cleanup levels in FS 6A is estimated at 33,000 cy (EKI, 2003). Zinc and selenium have been detected in groundwater above cleanup levels but may not be representative of contamination as described in Section 3.4.2.2.

2.3 Baker Beach Disturbed Areas 3 and 4

The material in BBDA 3 is composed primarily of soil and debris fill containing concrete, asphalt, and metal debris. Based on a review of aerial photographs, BBDA 3 received fill material intermittently between 1948 and 1973. Fill material was initially placed in BBDA 3 for erosion control along Lincoln Boulevard and along the access road to Battery Crosby. This area was used for additional dumping of debris until approximately 1973 (Dames & Moore, 1997).

The material in BBDA 4 is composed primarily of artificial fill and some debris fill that was used to stabilize a portion of Lincoln Boulevard. Fill material was apparently placed in BBDA 4 until 1955. Some erosion of the fill material downslope into the drainage channel has apparently occurred since then (EKI, 2003).

BBDA 3 and BBDA 4 are located in Area A of the Presidio, and therefore are subject to land uses established by the GMPA (NPS, 1994). Based on principles contained in the GMPA, land use at both BBDA 3 and BBDA 4 is designated as open-space recreational (EKI, 2003). The areas are part of the Coastal Bluff's planning zone of the GMPA, and special status ecological

species are known to be present in the vicinity of BBDA 3 and BBDA 4. Federally endangered plant species are located in the outcrops of serpentinite east of Battery Crosby (Figure 3). Therefore, for the purposes of this RAP, both BBDA 3 and BBDA 4 are considered as having open-space recreational and ecological special status land uses.

2.3.1 Site Geology and Hydrogeology at BBDA 3 and 4

The area in the vicinity of BBDA 3 and 4 is a steeply sloping bluff with a narrow beach (Baker Beach) at its base. Surface drainage in the area is to the west, toward the Pacific Ocean. Vegetation in the area consists of grasses, shrubs, and trees. BBDA 3 is located near the southern boundary of the Coastal Groundwater Basin, and BBDA 4 is located in the northwestern corner of the Lobos Groundwater Basin (Figure 4).

BBDA 3 lies at the boundary of two geologic regimes. The northern portion is predominantly Franciscan Formation overlain by landslide deposits, which generally consist of unstratified mixtures of bedrock fragments, sand, silt, and clay. The southern portion is covered almost entirely by Quaternary dune sand. BBDA 4 is covered entirely by Quaternary dune sand (Schlocker, 1974).

Geologic data were initially obtained from shallow hand-augured borings during the RI and later from additional, deeper borings as part of additional investigation by the Trust. Artificial fill at BBDA 3 is currently estimated to vary in thickness from less than one foot to a maximum depth of approximately 20 feet. At BBDA 4, artificial fill is currently estimated to range between 1 and 5 feet in thickness.

Based upon hydrogeologic information from adjacent areas, groundwater may be present in limited areas of the landslide deposits, dune sands, and the weathered serpentinite bedrock formations. However, no groundwater was encountered in any of the Army or Trust borings at either BBDA 3 or BBDA 4 (EKI, 2003). Surface water drainage and groundwater flow is assumed to follow the general topographic trend, to the west and toward the Pacific Ocean. A freshwater seep is located at the western boundary of BBDA 3 (Figure 8).

2.3.2 Previous Soil Sampling Results

2.3.2.1 BBDA 3

Environmental conditions at BBDA 3 have been described in a number of previous studies including the Army's multi-phased RI of the Presidio (Dames & Moore, 1997) and the Trust's additional site investigation in 2000 to assist in selecting final remedial actions for this site. Soil boring locations for the Army's RI and the Trust's additional site investigation are shown on Figure 9.

Previous analytical results for soil testing associated with the above-mentioned investigations are presented in Tables E-1 through E-4 in Appendix E. In general, these results indicate that primary chemicals detected within BBDA 3 include metals (lead and zinc with maximum concentrations of 1,000 mg/kg and 547 mg/kg respectively) and pesticides (4,4'-DDT and chlordane with maximum concentrations of 0.047 mg/kg and 0.31 mg/kg respectively). A complete comparison of the soil data results with applicable cleanup levels and selection of soil COCs for BBDA 3 is provided in Section 3.4.

2.3.2.2 BBDA 4

Environmental conditions at BBDA 4 have been described in a number of previous studies including the Army's multi-phased RI (Dames & Moore, 1997) and the Trust's additional site investigation. Soil boring locations for the Army's RI and the Trust's additional site investigation are shown on Figure 10.

Previous analytical results for soil testing associated with the above-mentioned investigations are presented in Tables F-1 through F-3 in Appendix F. In general, these results indicate that primary chemicals detected within BBDA 4 include metals (lead and zinc with maximum detections of 240 mg/kg and 172 mg/kg respectively), pesticides (4,4'-DDT and gamma-chlordane with maximum detections of 0.1 mg/kg and 0.4 mg/kg respectively), and total petroleum hydrocarbons as diesel (TPHd) with a maximum detection of 140 mg/kg. A comparison of these soil data results with applicable cleanup levels and the selection of soil COCs for BBDA 4 are provided in Section 3.4.

2.3.3 Previous Surface Water Sampling Results at BBDA 3 and 4

An ephemeral stream or seep flows at the bottom of the ravine below BBDA 3. In May 2000, the Trust collected water samples from the shallow subsurface of the area as described below and analyzed the samples for inorganics, total petroleum hydrocarbons as gasoline (TPHg), TPHd, benzene, toluene, ethylbenzene, and xylenes (BTEX), volatile organic compounds (VOCs), organochlorine pesticides (OCPs), PCBs, and chlorinated herbicides. Representatives of the Trust, NPS, and EKI selected the sampling location, which was near the toe of the debris, uphill from the exposed bedrock at the surface of the beach. The samples were collected from a hole dug in the sand until water was encountered at a depth of 4 feet bgs, using a disposable bailer as a temporary casing and pumping the water out of the casing into sample containers. The samples were filtered during collection through a 0.45-micron filter and then a 0.10-micron filter (EKI, 2000). One of the seep samples was found to contain TPHd at 77 µg/L. All historical surface water monitoring data for BBDA 3 are presented in Tables E-5 though E-9 in Appendix E. A comparison of surface water data results with applicable cleanup levels and the selection of groundwater and surface water COCs for BBDA 3 are provided in Section 3.4.

No surface water or groundwater samples have been collected at BBDA 4 because soil sampling results and hydrogeologic conditions at the site do not warrant further groundwater investigation or monitoring.

2.3.4 Nature and Extent of Impacts at BBDA 3 and 4

2.3.4.1 BBDA 3

The estimated volume of fill material contaminated with metals and pesticides above cleanup levels at BBDA 3 is 33,000 cy (EKI, 2003). As indicated in Figure 3, the inert fill material supporting Lincoln Boulevard is believed to be free of contaminated material and therefore is not included in this estimate of the volume in need of remedial action. Groundwater has not been monitored at BBDA 3, and testing of a surface water seep immediately downgradient of the site detected TPHd at a concentration less than its cleanup level.

2.3.4.2 BBDA 4

As shown on Figure 3, only a small portion of BBDA 4 is believed to be contaminated with metals and pesticides above cleanup levels. The estimated volume of impacted fill is 180 cubic yards (cy) (EKI, 2003). The data indicates that the remaining portions of BBDA 4 do not contain contaminated material above cleanup levels and therefore are not included in this estimate of the volume in need of remedial action.

3.0 SUMMARY OF SITE RISKS

This section presents the project's remedial action objectives, COCs, cleanup levels, and the nature and extent of contamination.

3.1 Remedial Action Objectives

Remedial Action Objectives (RAOs) are statements of the general goals of a cleanup. For the cleanup remedies to be conducted at FS 6A, BBDA 3, and BBDA 4, the RAOs are:

- Protection of human health and the environment.
- Cost-effective cleanup of the sites consistent with their intended land use. (Specific land use designations for each site are identified in Section 2.0).
- Consistency of the selected remedial alternative for each site with the overall restoration and transformation of the Presidio into a national park site.
- Recycling or reuse of landfilled materials at FS 6A and BBDA 3 to the extent practicable.
- Compliance with ARARs and TBCs.
- Preference for permanent ("clean closure") remedies whenever practicable, cost-effective, and consistent with future land use.

3.2 Regulatory Requirements

California HSC Chapters 6.5 and 6.8 outline requirements to be met in the conduct of remedial action at the Presidio. Also, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42.U.S.C. §§9601 *et. seq.*, requires that remedial actions at Federal Superfund sites achieve a level of cleanup that is protective of human health and the environment. Although the Presidio is not listed on the CERCLA National Priorities List (NPL), it is being cleaned up under CERCLA authority and the cleanup actions selected will meet CERCLA's objectives.

As described in Section 1.1, the Trust assumed responsibility for remediation of both Areas A and B of the Presidio on 24 May 1999 by signing the Presidio MOA and the Area A MOA. In addition, the Trust also entered into a Consent Agreement with DTSC and NPS on 30 August 1999 (DTSC, Trust, and NPS, 1999). The MOAs and Consent Agreement establish legal and administrative responsibilities and procedures for cleanup of chemical releases at the Presidio and will guide the Trust when conducting the remedial actions required by this RAP.

3.3 Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), requires remedial actions to attain or justify the waiver of applicable, or relevant and appropriate, federal and state environmental or state facility siting requirements. These applicable, or relevant and appropriate requirements are referred to as “ARARs”. Federal ARARs may include requirements promulgated under any federal environmental laws. State ARARs may only include promulgated, enforceable environmental or facility-siting laws of general application that are more stringent or broader in scope than federal ARARs and that are identified by the state in a timely manner. The DTSC, the lead state agency overseeing CERCLA cleanup activities at the Presidio, has reviewed the potential State ARARs identified as part of this process.

Applicable requirements are those cleanup standards, standards of control, criteria, or limitations that specifically address conditions, circumstances, or activities at a site. Relevant and appropriate requirements are those cleanup standards, standards of control, criteria, or limitations that, while not directly “applicable” to conditions, circumstances, or activities at the site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the site. A requirement that is not directly applicable must be both relevant and appropriate based on site-specific factors to be an ARAR. The criteria for determining relevance and appropriateness are listed in the NCP, 40 CFR § 300.400(g)(2).

Nonpromulgated advisories or guidance issued by federal or state government are not legally binding and do not have the status of potential ARARs. Such advisories or guidance, which are termed “To-be-Considered” (TBC) material, are used during the cleanup process to further the goal of protecting human health and the environment.

ARARs only include substantive, not administrative, requirements, and pertain only to onsite matters. Any off-site activities must comply with all applicable federal, state, and local laws, including both substantive and administrative requirements.

ARARs are identified on a site-specific basis from information about the chemicals at the site, the actions that may take place at the site, and the features of the site location. There are three general ARAR categories:

- chemical-specific,
- action-specific, and
- location-specific.

Chemical-specific ARARs are numerical values or methodologies that, when applied to site-specific conditions, result in the establishment of numerical values. They are used to determine acceptable concentrations of specific hazardous substances, pollutants, and contaminants in the environment. If a chemical is subject to more than one numerical value or methodology, the most stringent is generally selected.

Location-specific ARARs are restrictions placed on the concentration of hazardous substances, pollutants, or contaminants or the conduct of activities solely because they are in specific locations, such as wetlands or floodplains.

Action-specific ARARs are technology- or activity-based requirements or limitations on actions taken with respect to hazardous substances, pollutants, or contaminants.

The Trust's analysis and identification of chemical-specific, location-specific, and action-specific ARARs for the selected remedy for FS 6A and BBDAs 3 and 4 follow EPA guidance, including CERCLA Compliance with Other Laws Manual (Interim Final), EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9234.1-01, August 1988 (EPA, 1988a), and the CERCLA Compliance with Other Laws Manual: Part II, Clean Air Act and Other Environmental Statutes and State Requirements (Interim Final), OSWER Directive 9234.1-02, August 1989 (EPA, 1989a).

The following sections present the federal and state ARARs identified for the potential remedial alternatives for FS 6A and BBDAs 3 and 4. Table 1 contains ARARs and TBCs for FS 6A and Table 2 contains the ARARs and TBCs for BBDAs 3 and 4. Both tables provide the legal citations, identification as to whether the citation is an ARAR or TBC, and a brief description of the actions required by the ARAR or TBC to be taken in conjunction with implementation of the recommended remedial alternative at each site. In the event of a discrepancy between the text below and Tables 1 and 2, the information in the tables will prevail.

3.3.1 Chemical-Specific ARARs

The chemical-specific ARARs are listed in Table 1 for FS 6A and Table 2 for BBDAs 3 and 4. The majority of the chemical-specific ARARs are soil requirements that are pertinent to the remedial alternatives that include soil excavation. Other chemical-specific ARARs are those that address water quality.

Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2), requires cleanups managed under CERCLA to attain water quality criteria established under the Safe Drinking Water Act if those criteria are relevant and appropriate, considering, among other factors, the designated or potential use of the water resource. A number of other statutes and standards, including the RWQCB Water Quality Control Plan for the San Francisco Bay Region (known as the “Basin Plan”) (RWQCB, 1995) pertain to water quality and have been taken into account in establishing chemical-specific cleanup standards. Cleanup levels for the chemicals of concern are based on using the more stringent of federally- or state-designated maximum contaminant levels (MCLs).

The Toxic Substances Control Act (TSCA) provides standards for the clean up of PCBs. The RWQCB Order No. 96-070 provides standards for the cleanup of petroleum-based soil contamination in the Presidio (RWQCB, 1996).

3.3.2 Location-Specific ARARs

A complete listing of location-specific ARARs and TBCs for FS 6A and for BBDA 3 and 4 are listed in Tables 1 and 2, respectively. FS 6A, BBDA 3 and BBDA 4 share many location-specific ARARs and TBCs. The Presidio is a national park site within the Golden Gate National Recreational Area. The Golden Gate National Recreation Act, which set up protections for the scenic beauty of the Presidio and management consistent with sound principle of land use planning, is a location-specific ARAR. The Presidio, as a whole, is listed in the National Register of Historic Places as a Historic Landmark, which affords its historic resources and cultural landscapes certain protection under the National Historic Preservation Act (NHPA). In addition, archeological sites and resources are known to exist and other sites may be discovered elsewhere within the Presidio. In this event, the substantive standards of the Archeological and Historic Preservation Act (AHPA) and the Native American Graves Protection and Repatriation Act (NAGPRA) will provide guidance during the cleanup. Other federal and state statutes, such as the federal and state Endangered Species Acts (ESA) and the Migratory Bird Treaty Act (MBTA), provide standards for protection of natural resources found on the Presidio. The VMP, prepared jointly by the Trust and the NPS, establishes vegetative zones Presidio-wide and standards for future revegetation within each vegetation zone. Certain NPS natural resources management policies are listed as TBCs to ensure that the selected remedy is compatible with natural resource protection standards for National Park lands.

A location-specific TBC particular to FS 6A is the PTMP, which guides the future land uses for the FS 6A area. The Federal Coastal Zone Management Act, the Marine Mammal Protection Act, and the NPS Organic Act are applicable only at BBDA 3 and BBDA 4. The GMPA and the Area A MOA are TBCs for the remediation at these sites.

3.3.3 Action-Specific ARARs

A number of Federal and/or state technology-or activity-based standards pertain to the actions that will be carried out under the proposed remedies for each of the three sites addressed by this RAP. Standards for landfill maintenance, closure, and post closure monitoring are among the action-specific ARARs listed in Table 1 for FS 6A and Table 2 for BBDA 3 and 4.

With regard to landfill excavation and disposal, state laws and regulations implement the federal Resource Conservation and Recovery Act (RCRA) standards and are applicable to the remedial actions at FS 6A, BBDA 3, and BBDA 4. These provisions include standards for properly storing, handling and transporting excavated soils that may contain hazardous constituents. These regulations also set standards for testing of potential hazardous wastes prior to management and proper off-site disposal.

Much of the landfill content at all three sites is not believed to be hazardous waste but rather solid waste. DTSC has promulgated regulations in Title 27 CCR that govern the management of solid wastes. Title 27 of the California Code of Regulations (CCR) specifies water quality

monitoring standards, gas monitoring and control, and closure and post-closure maintenance requirements for non-hazardous solid waste management units. Title 27 also excludes inert construction debris, stating that “inert wastes do not require disposal at a classified unit.” The exclusion allows inert waste such as decontaminated concrete debris and organic “green waste” to be reused or recycled to the extent practicable.

The cleanup remedies at BBDA 3 and 4 have taken into account the RWQCB Basin Plan policy of no loss of wetlands as well as Presidio wetlands resources (NPS and Trust, 2003) in establishing action specific standards, discharge prohibitions, and erosion control measures to protect surface water and wetland resources. Bay Area Air Quality Management District (BAAQMD) regulations pertinent to dust suppression and onsite air monitoring during landfill excavation work are listed as action-specific ARARs. Available soil and groundwater analytical data compiled for FS 6A and BBDA 3 and 4 do not suggest that COCs in soil or groundwater are at high enough concentrations to volatilize or otherwise become airborne so as to adversely impact air quality under current conditions at the sites. Air quality impacts, if any were to occur, would result from dust and other air contaminants becoming airborne during excavation and off-site disposal. BAAQMD standards for control of particulates (Regulation 6), odorous substances (Regulation 7), organic compounds (Regulation 8, Rule 40), hydrogen sulfide (Regulation 9, Rule 2), and asbestos (Regulation 11, Rule 14) will be met to prevent air quality impacts from the selected remedial actions. City and County of San Francisco’s Sanitary Sewer Discharge Order for the Presidio has been included as a TBC because the Trust intends that discharges associated with the remediation activities (groundwater monitoring well purge water) meet the City’s sanitary sewer standards.

3.4 Development of Chemical and Site-Specific Cleanup Levels for Fill Site 6A, BBDA 3, and BBDA 4

The chemical and site-specific cleanup levels for soil and groundwater at FS 6A, BBDA 3, and BBDA 4 have been developed consistent with the process in the *Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater, and Surface Water* (Cleanup Levels Document) (EKI, 2002). Presidio cleanup levels are based on the calculated site-specific risk-based preliminary remediation goals (PRGs) and chemical-specific ARARs for potential contaminants of concern (PCOCs) detected in various media at the Presidio.

The key factors that were used to develop cleanup levels are background metal concentrations, human health exposure, and ecological exposure. Cleanup levels are defined by the most sensitive population that is reasonably associated with the planned land use identified for a particular area (EKI, 2002). As described in the Cleanup Level Document, background metals concentrations are based on the predominant soil lithologies found in the Presidio. For any given site, the applicable cleanup level incorporates the planned human land use (residential, recreational, or institutional), the predominant soil or sediment lithology and its associated background metal concentrations, and potential ecological species present (including the presence of special status species). In addition, some cleanup levels, particularly for petroleum

hydrocarbons and related constituents, are determined by Presidio-wide Site Cleanup Requirements as adopted in RWQCB Order No. 96–070 (Order).

Outlined below is the process used in the Cleanup Levels Document (EKI, 2002) to determine cleanup levels for specific sites at the Presidio:

1. Identify chemical-specific ARARs;
2. Identify human health and ecological risk-based PRGs established for the Presidio;
3. Based on existing and planned land uses at the Presidio, derive site-specific PRGs for PCOCs and impacted media (e.g., soil, sediment, groundwater, or surface water);
4. Calculate chemical-specific concentrations that present an acceptable risk for the affected populations;
5. Determine background metals concentrations in soil at the Presidio; and
6. Determine applicable cleanup levels, depending on the planned site use, presence of ecological receptors, site lithology, statutory requirements and regulatory orders, and protection of potential uses of groundwater or surface water.

3.4.1 Identification of Cleanup Levels and COCs for FS 6A, BBDA 3, and BBDA 4

Site-specific cleanup levels for the RAP sites are presented in:

- Table 3: Soil and Groundwater Cleanup Levels for Fill Site 6A;
- Table 4: Soil and Groundwater Cleanup Levels for BBDA 3; and
- Table 5: Soil Cleanup Levels for BBDA 4.

A comparison of laboratory detection limits to applicable cleanup levels for each site has been made. In cases where the cleanup level is below the laboratory detection limit, the detection limit will serve as the cleanup level. These compounds are noted in italics in Tables 3, 4, and 5.

3.4.2 Cleanup Levels and COCs at Fill Site 6A

Soil and groundwater cleanup levels developed for FS 6A are presented in Table 3. Table 3 provides soil cleanup levels for the Ecological Special Status Species Zone at FS 6A described in Section 2.2. Groundwater cleanup levels for FS 6A are based on protection of drinking water and surface water of the THRC.

3.4.2.1 Soil

Applicable soil cleanup levels for FS 6A are primarily based on the assumption of future residential land use in the area and ecological special status land use at the site. As described in Section 2.2, FS 6A is within the THRC and thus Ecological Special Status Zone cleanup levels

apply. Another consideration, background metals concentrations, are based on the predominant Colma Formation soil lithology. Cleanup levels for certain petroleum-based constituents are based on an assumed depth to the groundwater less than 5 feet in the THRC and greater than 5 feet elsewhere at this site.

Table 3 presents the soil cleanup levels for the FS 6A required by this RAP. Analytical results from previous Trust soil tests at FS 6A (described in Section 2.2.2 above) are compared to FS 6A cleanup levels and provided in Tables D-1 through D-5. As noted in Tables D-1 through D-5, certain metals (zinc, cadmium, and mercury) and PCB 1260 were detected in soil at concentrations greater than applicable cleanup levels (Figure 11).

It should be noted however, that although both zinc and cadmium were detected above their respective cleanup levels, there is some uncertainty regarding whether these detections are within the range of ambient background concentrations. Nevertheless, to ensure the protectiveness of the final remedy, these metals will be retained as PCOCs. PCB 1260 was detected above the applicable cleanup level at three locations, and mercury was detected at one location above its cleanup level. Therefore, both PCB 1260 and mercury are retained as soil COCs. The maximum detected concentrations of PCB 1260 and mercury are 1.4 mg/kg and 0.49 mg/kg.

The areas of FS 6A believed to contain PCB 1260 and mercury above cleanup applicable levels are depicted on Figure 11. In summary, the COCs in soil at FS 6A are PCB 1260 and mercury. Zinc and cadmium are PCOCs.

3.4.2.2 Groundwater

Applicable cleanup levels for groundwater at FS 6A are based on water quality criteria for drinking water or surface water, whichever is more stringent (Table 3). Previous analytical results for groundwater at FS 6A are summarized in Tables D-6 through D-8.

Chemicals identified above cleanup levels in groundwater at FS 6A area include selenium and zinc. An exceedence of the selenium cleanup level of 5 µg/L has been recorded in well LF6GW102, at 6.2 µg/L. This single exceedance occurred in one out of eight monitoring events and it is believed to be an artifact of sampling. Nevertheless, selenium will be retained as a groundwater PCOC for FS 6A. Zinc has been detected above the cleanup level of 106 µg/L in well LF6GW102 at a maximum concentration of 190 µg/L. The detection of zinc may be solely due to inadequate filtering of samples prior to analysis, as discussed in the Fourth Quarter Groundwater Monitoring Report (Treadwell & Rollo, 2003a). Nevertheless, zinc is a groundwater PCOC. Although PCB 1260 was retained as a soil COC, it will not be retained as a groundwater COC because it was not detected in FS 6A area groundwater. PCBs bind tightly to soil and are therefore not likely to leach downward through FS 6A soils into underlying groundwater. Similarly, mercury, a soil COC, is not a groundwater COC because mercury has not been detected above its laboratory detection limit of 0.2 µg/L, and the single detection of

mercury slightly above the most stringent ecological-based cleanup level does not constitute a threat to groundwater quality.

3.4.3 Cleanup Levels and COCs at BBDA 3

Soil and groundwater cleanup levels for BBDA 3 are presented in Table 4. BBDA 3 standards are generally based on recreational cleanup levels that are protective of human health or of special status species ecological receptors, whichever standard is more stringent. The applicable cleanup levels for metals are based on the predominant lithologies at BBDA 3, which include serpentinite, Colma formation, and beach/dune sand. Groundwater cleanup levels are based on protection of drinking water and freshwater seeps.

Because the applicable ecological cleanup levels are generally quite stringent, the Trust anticipates that residential (as opposed to the slightly less stringent recreational) cleanup levels are likely to be met at BBDA 3 with no appreciable change in scope or increase in cost. In this event, the protectiveness of the remedy will be enhanced and the site would be available for unrestricted future land use. Therefore, the cleanup levels that meet residential criteria as well as applicable ecological criteria are identified as the “target” cleanup levels for BBDA 3 on Table 4. In the unlikely event that post-excavation confirmation sampling reveals that residential cleanup levels cannot be readily met, the recreational cleanup levels will be considered to apply, and appropriate land use controls will be developed.

3.4.3.1 Soil

Soil sampling events were carried out by the Army in 1992 and 1994 and by the Trust in 2000. Analytical results from these Army and Trust soil sampling events for BBDA 3 are summarized and compared to applicable cleanup levels in Tables E-1 through E-4. BBDA 3 soil cleanup level exceedances are summarized on Figure 12.

Arsenic was detected in one location (BB3SB100) at 7.0 mg/kg, above the applicable cleanup levels (Table E-1). However, based on a review of the site data and bivariate scatter plots, the levels of arsenic detected are within the range of distributions expected for serpentinite or beach/dune lithology (EKI, 2003). Thus, arsenic is not a COC.

Chromium was detected at two locations above the applicable cleanup level of 120 mg/kg for beach/dune sand, but below the cleanup level of 1,700 mg/kg for serpentinite. Similarly, nickel was detected in three locations above the applicable cleanup level of 71 mg/kg for beach/dune sand, but below the cleanup level of 4,500 mg/kg for serpentinite (Table E-1). Since the lithology at BBDA 3 is considered a mixture of beach/dune sand and serpentinite, neither chromium nor nickel is a COC (EKI, 2003).

Cadmium was detected at one location (BBSB12) at 5.44 mg/kg, above the applicable cleanup levels of 1.9 and 1.7 mg/kg for serpentinite and beach/dune sand, respectively. Cobalt was detected in the same location at 279 mg/kg, above the applicable cleanup levels of 170 and

48 mg/kg for serpentinite and beach/dune sand, respectively. Lead was detected in numerous locations at concentrations ranging from 160 to 1,000 mg/kg, above the applicable cleanup level of 160 mg/kg for both soil types. Zinc was similarly detected in numerous locations at concentrations ranging from 92.1 to 2,900 mg/kg, above the cleanup levels of 160 and 66 mg/kg for serpentinite and beach/dune sand, respectively. Cadmium, cobalt, lead and zinc are COCs in soil for BBDA 3.

In addition, as noted in Table E-4, one sample contained PCB 1254 at 0.197 mg/kg, which exceeded the cleanup level of 0.033 mg/kg. With respect to soil sampling for pesticides, in the year 2000, the Trust's locations were resampled for pesticide analysis only due to high pesticide reporting limits during the first sampling event. DDT, dieldrin, and chlordane (which may include chlordane, alpha-chlordane and/or gamma-chlordane) were detected above applicable cleanup levels. Therefore, DDT, chlordane, dieldrin, and PCB 1254 are considered to be COCs at this site (EKI, 2003).

In summary, the COCs in soil at BBDA 3 consist of cadmium, cobalt, lead, and zinc, DDT, chlordane (including chlordane, alpha-chlordane, and gamma-chlordane), dieldrin, and PCB 1254 (Figure 12).

3.4.3.2 Groundwater and Surface Water

Applicable cleanup levels for groundwater and surface water at BBDA 3 are based on water quality criteria for drinking water or surface water, whichever is more stringent (Table 4). In 2000, the Trust collected and tested water samples from a freshwater seep immediately downgradient from the site. Analytical results for that sampling event are summarized in Tables E-6 through E-9 and compared to BBDA 3 groundwater cleanup levels. No contaminants were detected above cleanup levels.

Although the FS data supports the conclusion that there are no COCs in groundwater or surface water at BBDA 3, for purposes of protectiveness, priority pollutant metals and TPH will be retained as target analytes for groundwater monitoring during remedy implementation. Metals and TPH may constitute a threat to water quality at BBDA 3 due to the mobility of these chemicals through overlying soils. Because these low levels of pesticides and PCBs at BBDA 3 do not constitute a threat to groundwater or surface water quality at this site, they will not be retained as groundwater COCs. In summary, metals and TPH (including diesel, gasoline, and fuel oil components of TPH) will be monitored for potential impacts to groundwater quality during implementation of the remedial action at BBDA 3.

3.4.4 Cleanup Levels and COCs at BBDA 4

The soil cleanup levels at BBDA 4 are presented in Table 5. BBDA 4 soil cleanup standards are recreational cleanup levels and are protective of human health or of special status species ecological receptors, whichever standard is more stringent. The applicable cleanup levels for

metals are based on the predominant lithology at BBDA 4, which is beach/dune sand. As explained below, no groundwater or surface water cleanup levels are applicable to BBDA 4.

Because the applicable ecological cleanup levels are generally quite stringent, the Trust anticipates that residential (as opposed to the slightly less stringent recreational) cleanup levels are likely to be met at BBDA 4 with no appreciable change in scope or increase in cost. In this event, the protectiveness of the remedy will be enhanced and the site would be available for unrestricted future land use. Therefore, the cleanup levels that meet residential criteria as well as applicable ecological criteria are identified as the “target” cleanup levels for BBDA 4 on Table 4. In the unlikely event that post-excavation confirmation sampling reveals that residential cleanup levels cannot be readily met, the recreational cleanup levels will be considered to apply, and appropriate land use controls will be developed.

3.4.4.1 Soil

Soil sampling events were carried out by the Army in 1992 and by the Trust in 2000. Analytical results from these soil sampling events are summarized in Tables F-1 through F-3 and compared to BBDA 4 cleanup levels. BBDA 4 soil cleanup level exceedances are summarized on Figure 13.

The Army had characterized only the southern portion of BBDA 4 during its RI (Dames & Moore, 1997). Of the six soil samples collected by the Army, lead, zinc, chlordane, and DDT were detected at concentrations above cleanup levels in one sample. Cobalt was also detected above the applicable cleanup level in two samples. The Trust collected six shallow soil samples from three shallow soil borings at BBDA 4 in July 2000 (EKI, 2000). The Trust’s soil samples were analyzed for metals and pesticides. As at BBDA 3, the Trust’s locations were resampled for pesticide analysis only due to high pesticide reporting limits during the first sampling event. DDT was detected at a concentration of 0.012 mg/kg in the 0.5 ft bgs sample from one sample, but was not detected at the same location upon resampling.

Bivariate scatter plots of concentrations of major elements from site soil samples show differing distributions, depending on the laboratory that analyzed the data (EKI, 2001b). The cobalt results that exceed cleanup levels appear to be an artifact of the laboratory performing the analysis (EKI, 2003). Therefore, cobalt is not retained as a COC. Lead and zinc, which were also metals detected at concentrations greater than applicable cleanup levels (Table F-1) were outside the background distributions for their respective metals, regardless of the laboratory analyzing the soil samples. Therefore, lead and zinc are retained as COCs. In summary, the COCs in soil at BBDA 4 consist of lead, zinc, DDT, and chlordane and gamma-chlordane.

Soil sample analytical results indicate the fill used to support Lincoln Boulevard and Battery Chamberlin Road at BBDA 4 is likely uncontaminated structural soil and therefore not in need of remedial action. As shown on Figure 13, only a very limited area of the site is contaminated with COCs and slated for remedial action. For purposes of evaluating remedial alternatives at BBDA 4, the assumed volume of contaminated soil is 180 cy (EKI, 2003).

3.4.4.2 Groundwater or Surface Water

No freshwater seeps or other surface water features are present at the site; thus, no surface water samples have been collected at BBDA 4. Based on the analytical results for soil, only a small area of contamination exists at the site, and COCs are at concentrations in soil that do not pose a threat to groundwater quality. Therefore, groundwater quality at BBDA 4 is not threatened and impacts are considered highly unlikely. Thus, no COCs have been identified for groundwater at the site, and no surface water or groundwater sampling is proposed.

4.0 SUMMARY EVALUATION AND COMPARATIVE ANALYSIS OF REMEDIAL ACTION ALTERNATIVES

In accordance with the *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (EPA, 1988b), the Main Installation Sites FS (EKI, 2003) identifies potential remedial technologies for each of the three sites addressed in this RAP. The FS then assembles appropriate remedial technologies into remedial alternatives for each site. In order to select a remedy for each site, the remedial alternatives are subject to a three-step evaluation process as follows: (i) alternative screening and elimination based on effectiveness, implementability, and cost; (ii) detailed alternative analysis pursuant to the nine criteria of the NCP and the six criteria of Section 2535b.1 of the HSC; and (iii) comparative analysis - identifying the advantages and disadvantages of each alternative when compared to other alternatives considered for that site.

The nine NCP criteria include two threshold, five balancing, and two modifying criteria. For a remedial alternative to be considered an appropriate remedial action, it must meet both threshold criteria. Balancing criteria act as an opportunity to identify and evaluate strengths and weakness and cost-effectiveness of an alternative. Modifying criteria are evaluated after the public comment period on the RAP and community and State comments are received.

Threshold Criteria

1. Overall Protection of Human Health and the Environment

This criterion addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with ARARs

Addresses whether or not a remedy will meet all applicable or relevant and appropriate Federal, State and local environmental laws and regulations identified in the RAP.

Balancing Criteria

3. Long-term Effectiveness and Permanence

Considers the ability of a remedy to provide reliable protection of human health and the environment over time once cleanup goals have been achieved.

4. Reduction of Toxicity, Mobility and Volume (TMV) Through Treatment

Reflects the bias for treatment of contaminants by evaluating the anticipated performance of the alternative with respect to the reduction of toxicity, mobility, and volume of contaminants.

5. Short-term Effectiveness

Evaluates the period of time needed to complete the remedy, and any negative impact on human health and the environment that may be posed during remedy construction and implementation, until cleanup standards are achieved.

6. Implementability

Refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a remedial option.

7. Cost

Evaluates the capital and operations and maintenance (O&M) costs of each alternative.

Typically, preliminary cost estimates of this type are considered accurate within a range that may vary as much as 30 percent less to 50 percent more than the estimated cost. Some of the reasons for this range are the variability of construction materials, variability in construction costs over time, the complexity of developing site-specific cost factors, and the sensitivity of construction costs to economic factors such as interest rates and materials costs.

Modifying Criteria

8. Regulatory Agency Acceptance

Indicates whether, based on its review of the information, the applicable regulatory agencies agree with the preferred alternative.

9. Community Acceptance

A RAP is subject to public review and comment prior to the final selection of the remedial action alternative. This criterion assesses whether community concerns have been addressed by the remedy and whether or not the community has a remedy preference.

Additional Criteria

The HSC requires that remedial alternatives be evaluated relative to the following six additional criteria.

1. Health and safety risks posed by the site conditions.
2. The effect of COCs present on probable present and future uses of contaminated or threatened resources.
3. The effect on available groundwater resources for present, future, and probable beneficial uses. Treatment that reduces the volume, toxicity, and mobility of contaminants as opposed to alternatives that use off-site transport and disposal are preferred.

4. Site-specific conditions (potential for off-site migration) and existing contaminant background levels.
5. Cost-effectiveness, considering the short-term and long-term costs of the remedial action and whether deferral of a remedial action could result in a cost increase or hazard increase to human health or the environment.
6. The potential environmental impacts of the remedial alternative such as land disposal of contaminated material versus treatment to remove or reduce its volume, toxicity, or mobility prior to disposal.

The six HSC criteria are similar to and covered under the nine NCP criteria, but for this decision document, will be considered as additional criteria.

The comparative evaluation of alternatives for FS 6A, BBDA 3, and BBDA 4 are summarized in Tables 6, 7, and 8, respectively. A summary of estimated costs for each alternative evaluated for each site is presented in Table 9.

4.1 Fill Site 6A

The following remedial alternatives for FS 6A, from the FS, have been considered:

1. No Action for Soil and Groundwater
2. Install Permeable Cover Over Waste and No Action for Groundwater
3. Install Permeable Cover Over Waste and Monitor Groundwater
4. Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater
5. Excavate, Recycle Waste, Segregate Soil, and Monitor Groundwater

The objective of Alternative 1 is to provide no additional control or protection to human health and the environment for the contamination that exists at FS 6A.

Alternatives 2 and 3 include a soil cap to cover and contain the waste at FS 6A. These alternatives include the development and implementation of land use controls (LUCs). LUCs would be implemented to safeguard the cap, provide advance notice of a potential threat in the event of future ground disturbing activity, and restrict future land uses to those compatible with safeguarding the integrity of the cap. Alternative 2 includes no groundwater monitoring and Alternative 3 includes groundwater monitoring for 10 years.

Alternatives 4 and 5 involve removal of all soil and debris material where PCBs and metals are present above cleanup levels. The estimated volume of PCB and metal-impacted soil/debris fill is 33,000 cy. Excavated materials would be characterized and transported to an approved off-site disposal facility. Both alternatives include groundwater monitoring for at least 3 years until cleanup levels are achieved.

4.1.1 Summary of the Evaluation of the Remedial Alternatives

In Chapter 9 of the FS, remedial alternatives for landfill sites such as FS 6A are presented and screened against screening criteria (effectiveness, implementability, and cost) to reduce, as appropriate, the number of alternatives subject to a more detailed analysis. The only alternative that was screened out during the screening process is immobilization (EKI, 2003). The five remaining alternatives are analyzed using the NCP and State criteria, a comparative analysis that focuses on the relative performance of each alternative against those criteria, and the rationale as to why an alternative is recommended or not recommended. Table 10-18 of the FS provides the detailed and comparative analysis of five remedial alternatives for FS 6A. A summary of the evaluation in Table 10-18 is presented below and is summarized in Table 6. A summary of the estimated costs for each FS 6A alternative is presented in Table 9.

4.1.2 Summary of the Comparison of Alternatives

Threshold Criteria: As described in Table 6, Alternatives 3, 4, and 5 meet both threshold criteria (overall protection of human health and the environment and compliance with ARARs).

Alternative 1 (No Further Action for Soil and Groundwater) does not meet either threshold criteria. Alternative 2 would not address potential impacts to groundwater, and would therefore not be protective of human health or the environment. Because Alternatives 1 and 2 do not meet the Threshold Criteria, they have not been recommended for selection.

Balancing Criteria: Although none of the alternatives reduce toxicity or mobility through treatment, Alternatives 4 and 5 will offer long-term effectiveness and permanence because all fill and impacted soil are removed. Alternatives 2, 3, 4, and 5 provide adequate short-term protectiveness as normal construction practices and Occupational Safety and Health Administration (OSHA) standards would be employed to protect remedial construction workers (EKI, 2003). Alternative 5 reduces volume by segregating wastes and recycling usable material. Alternatives 1, 2, 3, 4, and 5 are readily implementable from the perspective of technical and administrative feasibility. A summary of the costs associated with the five alternatives is provided in Table 9. Alternative 4 is the most expensive remedy followed by Alternative 5 and Alternative 3. However, it should be noted that anticipated costs savings by soil and debris recycling assumed in the FS may not be fully realized, and therefore Alternative 5 may cost about the same as Alternative 4. Alternative 5 is more expensive than Alternative 3. However, for an acceptable cost increment, Alternative 5 best meets the RAOs for FS 6A including consistency with future intended land use, a preference for “clean closure” remedies where practicable and consistent with future land use, and landfill recycling whenever practicable.

Modifying Criteria: Although the modifying criteria were preliminarily assessed in the FS, final assessment of State Acceptance and Community Acceptance will be considered during the public comment period on this RAP and documented in the Final RAP.

4.1.3 Recommended Remedial Action Alternative for FS 6A

The Trust recommends Alternative 5 as the remedial action for FS 6A. Alternative 5 consists of: (a) excavating and removing PCB- and metal-contaminated fill soils and debris within FS 6A (“clean closure”); (b) segregation of uncontaminated soil and inert construction debris for recycling as practicable; (c) confirmation soil sampling for soil COCs to confirm that applicable soil cleanup levels have been achieved; (d) off-site disposal of contaminated soils and debris at a permitted waste management facility; and (e) three years of post-clean-closure groundwater monitoring. As part of the implementation of this remedy, subsurface utilities will be re-routed or removed and existing storm sewer system will also be removed.

Required soil and groundwater cleanup levels are provided in Table 3. The maximum boundary to which the excavation will proceed is shown in Figure 2. The post-excavation soil confirmation sampling program is described in Section 5.0, and the groundwater monitoring program is set forth in Section 6.0.

Among all alternatives, the recommended action represents the best balance of the NCP criteria, HSC criteria, and RAOs listed for this RAP. The additional cost associated with the recommended alternative is more than offset by the superior long-term effectiveness and permanence through clean-closure offered by this alternative. Alternative 5 provides the most cost effective approach to protection of human health and the environment that is consistent with the future planned land use of the site; it complies with federal and state ARARs and TBCs (Table 1); and it is protective of human health and the environment. The estimated present worth of capital costs for the recommended alternative is \$3,700,000 and the estimated present worth of annual costs is \$160,000 for an estimated total cost of \$3,860,000.

As stated above, the recommended alternative is fully consistent with future planned land use, specifically plans for restoration of the Tennessee Hollow Riparian Corridor as set out in the VMP and the PTMP. A separate planning and NEPA environmental review process for the THRC restoration will be implemented within portions of FS 6A. Because the proposed action will prepare the site for restoration activity, it is expected to be fully consistent with the range of alternatives being considered in the Tennessee Hollow watershed implementation planning process.

As part of the recommended RAP alternative measures will be taken to prepare the site for the THRC restoration. The excavation area will be re-graded to provide proper drainage and protected with erosion and weed control measures, which will be maintained until restoration (i.e. site revegetation per the VMP) activity occurs. Although not anticipated, if an underground storage tank is encountered during excavation work, it will be removed as part of this remedial action in accordance with the substantive requirements of applicable State and Federal laws. Specific information regarding the stockpiling and staging of soils, haul roads, and other details regarding the remedy will be set out in the Remedial Action Implementation Work Plan and the site-specific revegetation plans. Proposed haul roads for the transport of excavated materials off-

site are depicted in Figure 14. Soil stockpiling is expected to occur within the FS 6A site boundaries. Truck parking and staging is proposed to occur on the east side of FS 6A as shown on Figure 15. Additionally, protective fencing will be placed around the active construction areas at the site to assist in the protection of the public that may visit the vicinity of the site. The fencing can then be modified or replaced once construction has been completed in order to protect the newly revegetated areas.

Since there will be no hazardous substances, pollutants, or contaminants remaining at the site above cleanup levels, a CERCLA five-year remedy review will not be needed. If the groundwater levels are not within cleanup levels, then a five year review may be required.

4.2 Baker Beach Disturbed Area 3

The following remedial alternatives for BBDA 3, from the FS, have been considered:

1. No Further Action
2. Construct Low-permeability Cover Over Waste and Monitor Water
3. Excavate and Dispose of Soil and Waste Off-site and Monitor Water
4. Excavate, Recycle Waste and Segregate Soil, and Monitor Water

The objective of Alternative 1 is to provide no additional control or protection to human health and the environment for the contamination that exists at BBDA 3.

As shown in Figure 16, Alternatives 2, 3, and 4 involve remediation of the lower, western portion of BBDA 3 where soil and debris are contaminated the site at concentrations above cleanup levels. The volume of the portion of BBDA 3 in need of remediation is currently estimated to be 33,000 cy.

Alternative 2 consists of the construction of a soil cap over the site and the development and implementation of LUCs. Under Alternative 2, LUCs would be implemented to safeguard the cap, provide notice of a potential threat in the event of future ground disturbing activity, and restrict future land use at the site to uses compatible with recreational cleanup levels and a landfill cap.

Alternatives 3 and 4 involve excavation and removal of soil and debris contaminated at concentrations above cleanup levels. If residential cleanup criteria for soil are not met, future land use would be restricted to recreational use under these alternatives. If residential cleanup criteria are met, no soil-based land use controls or restrictions would apply.

Table 7 presents a summary of the alternatives evaluation in relation to the NCP criteria and the HSC criteria.

4.2.1 Summary of the Evaluation of the Remedial Alternatives

In Chapter 9 of the FS, remedial alternatives for landfill sites such as BBDA 3 are presented and screened against screening criteria (effectiveness, implementability, and cost) to reduce, as appropriate, the number of alternatives subject to a more detailed analysis.

The only alternative that was screened out during the screening process is immobilization (EKI, 2003). The four remaining alternatives are analyzed using the NCP and State criteria, a comparative analysis that focuses on the relative performance of each alternative against those criteria, and the rationale as to why an alternative is recommended or not recommended. Table 10-36 of the FS provides the detailed and comparative analysis of four remedial alternatives for BBDA 3. A summary of the evaluation in Table 10-36 is presented below and in Table 7. A summary of the estimated costs for each BBDA 3 alternative is presented in Table 9.

4.2.2 Summary of the Comparison of Alternatives

Threshold Criteria. With the exception of Alternative 1 (no action for soil and groundwater) and Alternative 2 (construct low-permeability cover over waste and monitor water), all the alternatives meet the two threshold criteria of overall protection of human health and the environment and compliance with ARARs. Alternative 2 may not comply with ARARs because leaving the waste in place and capping it does not conform with NPS management policies (NPS, 2000). Because Alternatives 1 and 2 do not meet the Threshold Criteria, they cannot be selected.

Balancing Criteria: Although Alternatives 2, 3, or 4 do not reduce toxicity or mobility through treatment, Alternatives 3 and 4 provide superior long-term effectiveness and permanence over Alternative 2 because all fill and impacted soil are removed and therefore no long-term risk remains at the site. Alternative 4 will decrease waste volume through waste segregation and recycling usable material. Alternatives 2, 3, and 4 each would provide adequate short-term effectiveness through the use of normal construction practices, and OSHA standards would be employed to protect remedial construction workers and the general public. Alternatives 2, 3, and 4 are readily implementable from the perspective of technical and administrative feasibility.

Table 9 provides a comparison of the costs associated with the four alternatives. Alternative 3 is the most expensive remedy followed by Alternatives 4 and 2. However, it should be noted that anticipated cost savings from soil and debris recycling assumed in the Main Installation FS may not be fully realized; therefore, Alternatives 3 and 4 may cost about the same. Alternative 4 is more expensive than Alternative 2 and may only be slightly less or equal in cost with Alternative 3. For an acceptable cost increment, Alternative 4 best meets the RAOs for BBDA 3 including consistency with future intended land use, a preference for clean-closure remedies where practicable and consistent with future land use, and landfill recycling whenever practicable.

Modifying Criteria: Although the modifying criteria were preliminarily assessed in the FS, final assessment of State Acceptance and Community Acceptance will be considered during the public comment period and documented in the Final RAP.

4.2.3 Recommended Remedial Action Alternative for BBDA 3

The Trust recommends Alternative 4 as the remedial action for BBDA 3. Alternative 4 consists of a “clean closure” remedy: (a) excavating contaminated debris and soil fill within the area of BBDA 3 as shown generally in Figure 16; (b) segregation of uncontaminated soil and inert construction debris for recycling, as practicable; (c) soil confirmation sampling for soil COCs to ensure soil cleanup levels have been achieved; (d) off-site disposal of contaminated debris and soils at a permitted waste management facility; and (e) three years of post-clean-closure groundwater and surface water monitoring.

Required soil and groundwater cleanup levels are provided in Table 4. The post excavation soil confirmation sampling program is described in Section 5.0, and the groundwater and surface water monitoring program is set forth in Section 6.0.

Among all alternatives, Alternative 4 represents the best balance of the NCP criteria, HSC criteria, and RAOs listed for this RAP. The additional cost associated with the recommended alternative is more than balanced by the superior long-term effectiveness and permanence through clean-closure offered by this alternative. Alternative 4 provides the most cost effective approach to protection of human health and the environment that is consistent with the future planned land use of the site; it complies with federal and state ARARs and TBCs (Table 1); and, it is protective of human health and the environment. The estimated capital cost of this alternative is \$4,400,000. When combined with a present worth of annual O & M costs of \$150,000, the total cost is estimated to be \$4,550,000.

If recycling of material is not practicable, then the fill material will be disposed off-site. Proposed haul roads for the transport of excavated material off-site are depicted in Figure 14. Staging, temporary stockpiling, and sorting/recycling of materials will be conducted within or near the site boundaries (Figure 16). Although not anticipated, if an underground storage tank is encountered during excavation work, it will be removed as part of this remedial action in accordance with the substantive requirements of applicable State and Federal law.

Confirmation sampling for soil COCs (metals, pesticides, and PCB 1254) will be conducted in accordance with Section 5.0. Once confirmation sampling confirms the excavation is complete, the sidewalls will be graded to limit erosion and potential raveling (Treadwell & Rollo, 2002). The shape and appearance of the slopes will be addressed in the final remedial design and will depend upon the amount of soil excavated.

Protective fencing will be placed around the active construction areas to prevent public access and to assist in the protection of sensitive species and habitats in the vicinity of the site. After construction is complete, the fencing can be modified or replaced to ensure protection of the newly revegetated areas. Removal of trees will be required to excavate BBDA 3. Tree cutting will be coordinated with Trust and NPS natural resource staff to avoid potential disruption to nesting or migrating birds. As part of the recommended alternative, the excavation area will be graded to provide proper drainage, and protected with erosion and weed control measures.

Once the natural site topography is restored, slopes in the remediated area will experience localized erosion and raveling, particularly during heavy rains. These movements of surface soils are anticipated to be consistent with natural processes found in dune and coastal bluff environments at the Presidio and characteristic of the Pacific coastline.

Since no hazardous substances, pollutants, or contaminants will remain at the site above residential cleanup levels, a CERCLA five-year remedy review will not be needed. In the unlikely event that post-excavation confirmation sampling reveals that residential cleanup levels cannot be readily met, then LUCs to restrict land use to appropriate recreational use will be developed, and a CERCLA five-year review may be required.

4.3 Baker Beach Disturbed Area 4

The following remedial alternatives for BBDA 4, from the FS, have been considered:

1. No Further Action for Soil and Surface Water
2. Excavate and Dispose of Soil Off-site and No Action for Surface Water

The objective of Alternative 1 is to provide no additional control or protection to human health and the environment for the contamination that exists at BBDA 4. Alternative 2 involves remediation of only the area of the site that is impacted by COCs above cleanup levels, located in the southern portion of BBDA 4, near the intersection of Lincoln Boulevard and Battery Chamberlin Road (Figure 3). The area of BBDA 4 that requires a remedial action is shown on Figure 10. The estimated volume of COC-contaminated soil/debris fill is 180 cy. The remaining portions of BBDA 4 are not contaminated with COCs at concentrations above either applicable cleanup levels for this site or Presidio residential levels (e.g. unrestricted levels) and therefore do not require a remedial action or LUCs.

Alternative 2 includes the removal of all soil material where COCs are above cleanup levels and the development and implementation of LUCs. If residential cleanup standards for soil are not met, future land use at the site would be restricted to uses compatible with recreational cleanup levels. If residential cleanup standards are met, no soil-based land use controls or restrictions would be required.

Table 8 presents a summary of the detailed analysis of these two alternatives in relation to the NCP criteria and the HSC criteria.

4.3.1 Summary of the Evaluation of the Remedial Alternatives

In Chapter 9 of the FS, remedial alternatives for landfill sites such as BBDA 4 are presented and screened against screening criteria (effectiveness, implementability, and cost) to eliminate unreasonable alternatives and to reduce, as appropriate, the number of alternatives considered for implementation. FS Alternatives 1 and 2 were retained for detailed analysis for BBDA 4. In Chapter 10 of the FS, alternatives are evaluated against the NCP's nine criteria and the additional State criteria described in Section 4.0 above, followed by a comparative analysis that focuses on the relative performance of each alternative against those criteria and provides the rationale as to why an alternative is recommended or not recommended. Table 10-37 of the FS provides the detailed and comparative analysis of the two remedial alternatives for BBDA 4. A summary of the evaluation in Table 10-37 is presented below and in Table 8. A summary of the estimated costs for each BBDA 4 alternative is presented in Table 9.

4.3.2 Summary of the Comparison of Alternatives

Threshold Criteria: Alternative 1 does not meet the two threshold criteria of overall protection of human health and the environment and compliance with ARARs. Because Alternative 1 does not meet the Threshold Criteria, it cannot be selected. Alternative 2 meets both threshold criteria.

Balancing Criteria: With respect to the five balancing criteria, Alternative 2 provides superior long-term effectiveness and is permanent, because all fill and impacted soil are removed. Alternative 2 does not reduce toxicity, mobility or volume through treatment. Alternative 2 would provide adequate short-term effectiveness and is implementable. Due to the limited scope of work, the cost of Alternative 2 is low.

Modifying Criteria: Although the modifying criteria were preliminarily assessed in the FS, final assessment of State Acceptance and Community Acceptance will be considered during the public comment period and documented in the Final RAP.

4.3.3 Recommended Remedial Action Alternative for BBDA 4

The Trust recommends Alternative 2 as the remedial action for BBDA 4. Alternative 2, consists of a “clean closure” remedy with the following components: (a) excavating contaminated soil “hot spot” within the area of BBDA 4 as shown generally in Figure 16; (b) soil confirmation sampling for soil COCs (metals and pesticides) to ensure compliance with soil cleanup levels have been achieved; and (c) off-site disposal of contaminated debris and soils at an approved waste management facility. The remedy includes no action for surface water or groundwater.

Required soil cleanup levels are provided in Table 5. The post excavation soil confirmation sampling program is described in Section 5.0.

Among all alternatives, the recommended action represents the best balance of the NCP criteria, HSC criteria, and RAOs identified for this RAP. The recommended alternative is being selected because it will meet ARARs and TBCs (Table 2) and is protective of human health and the environment. It offers permanence through clean closure where practicable, is consistent with future site land use, and provides the most cost-effective approach to protection of human health and the environment. The estimated capital cost of this alternative is \$120,000. There are no annual O & M costs, and therefore the total cost is estimated to be \$120,000.

Proposed haul roads for the transport of excavated material off-site are depicted in Figure 14. Soil excavation will likely proceed from areas known to contain soil COCs above cleanup levels toward the areas that are not suspected to contain these chemicals (e.g., along the surface drainage feature). In accordance with Section 5.0, confirmation samples from the excavation bottom and sidewalls will be collected and analyzed for soil COCs (metal and pesticides) to verify cleanup levels are achieved. Once excavation is complete, the excavation will be regraded and/or backfilled to maintain the structural integrity of Chamberlin Road (EKI, 2003) and to limit erosion. If backfill is required, the backfill soils shall meet BBDA 4 cleanup levels and shall be subject to NPS approval prior to placement. As part of the recommended alternative, the excavation area will be graded to provide proper drainage, and protected with erosion and weed control measures, which will be maintained until restoration (i.e. site revegetation per the VMP) activity occurs.

If no hazardous substances, pollutants, or contaminants will remain at the site above residential cleanup levels, a CERCLA five-year remedy review will not be needed. In the unlikely event that post-excavation confirmation sampling reveals that residential cleanup levels cannot be readily met, then LUCs to restrict land use to appropriate recreational use will be developed, and a CERCLA five-year review may be required.

5.0 CONFIRMATION SOIL SAMPLING PROGRAMS

As part of the excavation and removal of contaminated debris and soil at each RAP site, confirmation sampling will be performed to verify that the material left in place meets applicable cleanup levels for each COC. Soil confirmation samples will be checked for compliance with the soil cleanup levels in Table 3 for FS 6A, Table 4 for BBDA 3, and Table 5 for BBDA 4. As indicated in Table 3, for certain compounds, two different cleanup levels may apply, depending on the depth to groundwater from the ground surface at the location where the confirmation sample is collected. If the depth to groundwater is less than 5 feet, the more stringent criterion listed (in parentheses) applies. Depth to groundwater at each confirmation sampling location will be estimated based upon the water level data for the FS 6A monitoring network wells presented in the Fourth Quarter Groundwater Monitoring Report (Treadwell & Rollo, 2003a).

If stained or discolored soil, odors, or other field observations indicative of potential contamination arise, sample collection and analytical tests in addition to those described below will be added to the soil confirmation program. If a particular confirmation sample exceeds a soil cleanup level, either:

- Further soil will be excavated in the area where levels remain elevated and the newly excavated area will be resampled (in accordance with the sampling strategy described in this Section); or
- No further soil will be excavated if the 95% Upper Confidence Limit (UCL) of the mean of all confirmation sampling data is equal to or less than the cleanup levels in the RAP.

Either all soil confirmation samples or the 95% UCL of the mean of the site soil confirmation sample data set must comply with the cleanup levels required for each site addressed by this RAP. If further soil excavation is needed under either of these confirmation protocols, additional vertical excavation will proceed in 0.5-foot increments in native serpentinitic soil and 1.0-foot increments in other material. When either all the analytical results or the 95% UCL of the soil sample analytical results meet the cleanup levels, the excavation will be considered complete. As explained in Section 5.1, at FS 6A, sidewall and perimeter samples may exceed cleanup levels (i.e. they may be identifying contamination at FS 6B). At maximum geometry (Figure 2), no future excavation will occur. In addition, the remedial construction will be considered complete when the sites are stabilized for vegetative restoration and groundwater monitoring wells, if required by this RAP, have been installed. The remedial action will be considered complete when groundwater monitoring results demonstrate compliance with groundwater cleanup levels in accordance with this RAP.

Deviations from the sampling program outlined below will receive prior regulatory agency approval and additional soil samples may be requested by the regulatory agencies during remedial action implementation.

5.1 Fill Site 6A

At FS 6A, it is anticipated that after contaminated fill materials have been removed, the exposed native ground surface will consist mostly of excavation “bottom” and relatively little “sidewall” area. To ensure slope stability during the performance of the work, the excavated face at FS 6A may require one or more benches.

- Bottom sampling: Based on the estimated size of the FS 6A excavation, a 75- by 75-foot sampling grid will be used to guide the collection of excavation bottom and sidewall or perimeter samples. The estimated surface area of the excavation bottom at FS 6A is 100,000 square feet, and one bottom sample will be collected per 5,625 square feet.
- Sidewall sampling: If a sidewall height of over 1 foot but less than 5 feet occurs, it will be sampled at the midpoint of its height every 75 feet of its lateral extent. Sidewall with a height greater than 5 feet but less than 15 feet will be sampled at one-third and two-thirds of wall height every 75 feet of its lateral extent. If a sidewall height is 1 foot or less, sidewall samples will not be collected, but perimeter samples will be required.
- Perimeter sampling: If a sidewall height is less than 1 foot or no sidewalls exist at the perimeter of the excavation, perimeter samples will be collected, one sample per every 75 feet of its lateral extent.

The actual physical dimensions of the excavation will determine the number of bottom and sidewall samples collected. The FS 6A site boundaries as shown in Figure 2 represent a maximum geometry to which the excavation will proceed.

Confirmation samples will be analyzed at FS 6A as follows.

Step 1a. All samples will be analyzed for:

- PCBs by EPA Method 8082;
- Metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc) by EPA Method 6010/6020; and
- Mercury by EPA Method 7471.

Step 1b. Ten percent of all samples collected (every 10th sample) will be analyzed for a broader range of compounds to protect against uncertainties resulting from limited characterization as follows:

- VOCs by EPA Method 8260B;
- SVOCs by EPA Method 8270C;
- Pesticides by EPA Method 8081;
- Chlorinated herbicides by EPA Method 8150; and
- TPHd and TPHfo by EPA Method 8015 modified and [EPA Method 3630A - Silica Gel Cleanup.](#)

Step 2. If the samples do not meet the cleanup levels for the COCs and PCOCs (which include cadmium, zinc, mercury, and PCB 1260), excavation will continue until cleanup levels are met. The extent of additional excavation will be determined in the field based on knowledge of potential contaminant distributions, field observations, existing sample results, and professional judgement.

Step 3. As described in Section 5.0, if the samples meet the cleanup levels for the COCs as well as the broader range of compounds, the excavation will be considered complete.

Although pesticides are not a COC at FS 6A, based on Trust experience of detecting pesticides underneath building foundations elsewhere in the Presidio, the Trust will test for pesticides using EPA Method 8081 at locations where building foundations are removed. One sample will be collected for pesticide analysis every 75-feet along the longitudinal center axis of each building foundation.

At FS 6A, sidewall and perimeter samples may exceed cleanup levels (i.e. they may be identifying contamination at FS 6B). At maximum geometry (Figure 2), no future excavation will occur. Samples with exceedances will be surveyed, a geotextile material will be placed as appropriate, and the data will be documented in the Completion Report for this site.

5.2 Baker Beach Disturbed Area 3

At BBDA 3, it is anticipated that after the contaminated materials have been removed, the exposed land surface will consist mostly of excavation “bottom” and relatively little “sidewall” area. To ensure slope stability during the performance of the work, the excavated face at BBDA 3 may require one or more benches. In addition, due to some uncertainty regarding the limits of waste, one or more “step-outs” of the excavation may be required.

- Bottom sampling: Based on the estimated size of the BBDA 3 excavation, a 75- by 75-foot sampling grid will be used to guide the collection of excavation bottom and sidewall or perimeter samples. The estimated surface area of the excavation bottom at BBDA 3 is 100,000 square feet, and one bottom sample will be collected per 5,625 square feet.
- Sidewall sampling: If a sidewall height of over 1 foot but less than 5 feet occurs, it will be sampled at the midpoint of its height every 75 feet of its lateral extent. Sidewall with a height greater than 5 feet but less than 15 feet will be sampled at one-third and two-thirds of wall height every 75 feet of its lateral extent. If a sidewall height is 1 foot or less, sidewall samples will not be collected, but perimeter samples will be required.
- Perimeter sampling: If a sidewall height is less than 1 foot or no sidewalls exist at the perimeter of the excavation, perimeter samples will be collected, one sample per every 75 feet of its lateral extent.

The actual physical dimensions of the excavation will determine the number of bottom and sidewall samples that will be collected.

Confirmation samples will be analyzed at BBDA 3 as the follows.

Step 1a. All samples will be analyzed for:

- Metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc) by EPA Methods 6010/6020;
- Pesticides by EPA Method 8081; and
- PCBs by EPA Method 8082.

Step 1b. Ten percent of all samples collected (every 10th sample) will be analyzed for a broader range of compounds to protect against uncertainties resulting from limited characterization as follows:

- Mercury by EPA Method 7471;
- VOCs by EPA Method 8260B;
- SVOCs by EPA Method 8270C;
- Chlorinated herbicides by EPA Method 8150; and
- TPHd and TPHfo by EPA Method 8015 modified and [EPA Method 3630A - Silica Gel Cleanup](#).

Step 2. If the samples do not meet the cleanup levels for the COCs (which include cadmium, cobalt, lead, and zinc, DDT, chlordane, dieldrin, and PCB 1254), excavation will continue until cleanup levels are met. The extent of additional excavation will be determined in the field based on knowledge of potential contaminant distributions, field observations, existing sample results, and professional judgement.

Step 3. As described in Section 5.0, if the samples meet the cleanup levels for the COCs as well as the broader range of compounds, the excavation will be considered complete.

It should be noted that because the majority of the ecological special status cleanup levels for BBDA 3 are more stringent than the residential cleanup levels, there is a likelihood that confirmation sampling at BBDA 3 will show that all residential cleanup standards have been met, in which case the site would not be subject to future land use restrictions based on environmental cleanup criteria. Otherwise, land use will be restricted to uses compatible with recreational cleanup levels.

5.3 Baker Beach Disturbed Area 4

At BBDA 4, it is anticipated that after the impacted materials have been removed, the excavation will be generally box-shaped. The estimated volume of impacted soil is 180 cy.

- Bottom sampling: A minimum of two bottom samples will be collected. If the bottom exceeds 1,000 square feet, a 50- by 50-foot sampling grid will be used to guide the collection of excavation bottom samples with one sample collected for every 2,500 square feet of excavation bottom.
- Sidewall sampling: If a sidewall height of over 1 foot but less than 5 feet occurs, it will be sampled at the midpoint of its height every 50 feet of its lateral extent. Sidewall with a height greater than 5 feet, but less than 15 feet, will be sampled at one-third and two-thirds of wall height every 50 feet of its lateral extent. If a sidewall height is 1 foot or less, sidewall samples will not be collected, but perimeter samples will be required. If sidewalls exist and are less than 50 feet in length, a minimum of one sidewall sample per sidewall (assuming a total of 4 sidewalls) will be collected.
- Perimeter sampling: If a sidewall height is less than 1 foot or no sidewalls exist at the perimeter of the excavation, perimeter samples will be collected, one sample per every 50 feet of its lateral extent. For perimeters dimensions of less than 50 feet in length, a minimum of one perimeter sample per “excavation side” (assuming a total of 4 sides) will be collected.

The actual physical dimensions of the excavation will determine the number of bottom, sidewall, and perimeter samples to be collected.

Confirmation samples will be analyzed at BBDA 4 as follows.

Step 1a. All samples will be analyzed for:

- Metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium, and zinc) by EPA Method 6010/6020; and
- Pesticides by EPA Method 8081.

Step 1b. Ten percent of all samples collected (every 10th sample) will be analyzed for a broader range of compounds to protect against uncertainties resulting from limited characterization as follows:

- Mercury by EPA Method 7471;
- VOCs by EPA Method 8260B;
- SVOCs by EPA Method 8270C;
- PCBs by EPA Method 8082;
- Chlorinated herbicides by EPA Method 8150; and
- TPHd and TPHfo by EPA Method 8015 modified and [EPA Method 3630A - Silica Gel Cleanup.](#)

Step 2. If the samples do not meet the cleanup levels for the COCs (which include lead, zinc, 4,4'-DDT, chlordane, and gamma-chlordane), excavation will continue until cleanup levels are met. The extent of additional excavation will be determined in the field based on knowledge of

potential contaminant distributions, field observations, existing sample results, and professional judgement.

Step 3. As described in Section 5.0, if the samples meet the cleanup levels for the COCs as well as the broader range of compounds, the excavation will be considered complete.

It should be noted that because the majority of the ecological special status cleanup levels for BBDA 4 are more stringent than the residential cleanup levels, there is a likelihood that confirmation sampling at BBDA 4 will show that all residential cleanup standards have been met, in which case the site would not be subject to future land use restrictions based on environmental cleanup criteria. Otherwise, land use will be restricted to uses compatible with recreational cleanup levels.

6.0 GROUNDWATER AND SURFACE WATER MONITORING PROGRAMS

The objectives of the proposed groundwater and surface water monitoring programs vary from site to site, depending on the review of historical data presented in Section 3.0. As stated in Section 3.4.2, at FS 6A, COCs in groundwater are dissolved metals (including PCOCs selenium and zinc). As stated in Section 3.4.3, at BBDA 3, COCs in groundwater and surface water have been assumed to be dissolved metals and TPH. As explained in Section 3.4.4, no post-closure groundwater or surface water monitoring is required for BBDA 4.

6.1 Fill Site 6A

Three years of groundwater monitoring for groundwater COCs is required as part of the recommended alternative for FS 6A.

Prior to remediation excavation activities, existing well LF6GW102 will be abandoned. Following completion of excavation activities, two new wells will be installed at the approximate locations shown on Figure 6. The FS 6A groundwater well monitoring network consisting of both new and existing wells is shown on Figure 6. The proposed groundwater monitoring program and rationale is presented in Table 10. This groundwater monitoring program for FS 6A will be incorporated into the sampling and analytical program for the ongoing Presidio Groundwater Monitoring Program for the site (Treadwell & Rollo, 2001).

Groundwater elevations will be measured quarterly at all wells identified on Figure 6 for the FS 6A well network .

Following excavation, groundwater samples, including Quality Assurance/Quality Control (QA/QC) samples (duplicates, equipment blanks, and trip blanks), will be collected and analyzed at the frequency described above and in accordance with the *Presidio-wide Quality Assurance Project Plan* (Tetra Tech EM Inc., 2001) for three years for the following constituents as presented below and in Table 10.

- Metals by EPA Method 6010/6020 including selenium and zinc;
- Dissolved oxygen (DO) by field probe; and
- General water quality parameters by various methods.

In addition, the collected groundwater samples will be analyzed for mercury (by EPA Method 7470) for four quarters.

Groundwater samples will be collected and analyzed per the requirements presented in Table 10. Sampling results will be reviewed after each sampling event. The analytical results for the metals will be compared to other data sources and information to determine or refine background conditions for selected metals. Any detections will be tracked over time to determine, in conjunction with other relevant data and information, whether the exceedances are anomalies,

indications of a trend of a persistent groundwater contaminant, or representative of background conditions.

If the groundwater is found to have met applicable RAP cleanup levels for an analytical test method (eg. metals by EPA Methods 6010/6020) for four consecutive quarters, that test method will continue to be analyzed on a semi-annual basis for two additional years. When the groundwater is found to have met applicable RAP cleanup levels for the analytes identified by that test method for four consecutive semi-annual sampling events, the sampling for that test method will no longer be required and shall cease.

Upon regulatory agency concurrence, the wells associated with FS 6A will be properly abandoned.

Surface water quality of the restored creek segment within FS6A will be monitored in accordance with the Trust's Storm Water Pollution Prevention Plan (SWPPP) for FS6A. Field measurements for water quality parameters of temperature, pH, and turbidity will be taken at locations where the restored creek enters (i.e., inlet locations) and exits (i.e., outlet locations) the FS6A site. If FS6A water quality monitoring data show that remedial actions under this RAP are having adverse effects on the water quality of the restored FS6A stream section, best management practices as described under the FS6A SWPPP will be implemented to correct the condition.

6.2 Baker Beach Disturbed Area 3

Three years of surface and groundwater monitoring is required as part of the recommended alternative for BBDA 3. The proposed groundwater and surface water monitoring program and rationale for BBDA 3 is presented in Table 10.

To date, a single freshwater seep (BB3SW100) has been identified at BBDA 3 and the area sampled as described in Section 2.3.3. It is anticipated that conditions may change after all impacted fill materials and soil have been removed from the western portion of BBDA 3. Therefore, for the first year following the completion of excavation activities, the area will be inspected, at a minimum, quarterly as well as during and/or after a minimum of three major rainfall events to identify any apparent seep locations. If the location of seep BB3SW100 changes from the area previously sampled (Figure 8), the location and designation will be revised under the sampling and analysis program. Relocated and/or additional seep designations will begin with BB3SW101. The method of sampling a free-flowing seep (versus a shallow well point) will be determined based on field conditions.

It is proposed that three new wells be constructed to monitor groundwater quality in the area of BBDA 3. Proposed wells BB3GW100, BB3GW101 and BB3GW102 will be located near or within the impacted area of BBDA 3 at approximate locations shown on Figure 8. The monitoring wells will be installed after the completion of all excavation activities, but prior to revegetation of the area. Two existing Fill Site 5 wells (LF5GW100, LF5GW101) are located generally upgradient of BBDA 3. However, they are not formally considered part of the

monitoring network for BBDA 3, due to the observed differences in lithology between these two wells and the deep borings (BB3SB100, BB3SB101, and BB3SB102) within BBDA 3. The proposed analytical methods and sampling frequency for each method as shown in Table 10 will be incorporated into the sampling and analytical program for the ongoing Presidio Groundwater Monitoring Program for the sites (Treadwell & Rollo, 2001).

It is assumed that the new wells at BBDA 3 would be drilled into the beach/dune sand and possibly the underlying serpentinite bedrock. However, the well screen interval will be chosen in the field based on the presence of groundwater, which may occur within the beach/dune sand or within the underlying fractured serpentinite of the Franciscan Formation.

The groundwater elevation at the new wells will be measured quarterly. Groundwater and surface water samples, including QA/QC samples (duplicates, equipment blanks, and trip blanks), will be collected and analyzed at the frequency described above and in accordance with the *Presidio-wide Quality Assurance Project Plan* (Tetra Tech EM Inc., 2001) for three years for the following constituents as presented below and in Table 10.

- Metals by EPA Method 6010/6020 including cadmium, cobalt, lead, and zinc;
- TPH by EPA Method 8015 modified and EPA Method 3630A - Silica Gel Cleanup;
- DO by field probe; and
- General water quality parameters by various methods.

If the groundwater is found to have met applicable RAP cleanup levels for a particular test method (eg. metals by EPA Method 6010/6020) of analytes for four consecutive quarters, that test method will continue to be analyzed on a semi-annual basis for two additional years. When the groundwater is found to have met applicable RAP cleanup levels for the analytes identified using that test method for four consecutive semi-annual sampling events, the sampling for that test method will no longer be required and shall cease.

Upon regulatory agency concurrence, the wells associated with BBDA 3 will be properly abandoned.

6.3 Baker Beach Disturbed Area 4

The recommended alternative for BBDA 4 does not require any groundwater or surface water monitoring.

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TABLES

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Chemical-Specific ARARs and TBCs				
Federal ARARs and TBCs				
• Safe Drinking Water Act (SDWA)	42 USC § 300g-1, Health and Safety Code § 116365	The National Contingency Plan (NCP) at 40 CFR §§300.43(e)(2)(i)(B)-(D) states that maximum contaminant level goals (MCLGs), established under the SDWA, that are set at levels above zero should be attained by remedial actions for surface water or groundwater that are current or potential sources of drinking water. For contaminants of concern (COCs) in groundwater at FS6A that do not have MCLGs, or if the MCLGs have been set at zero, the remedial actions should achieve Maximum Contaminant Levels (MCLs).	Relevant and appropriate	The cleanup levels for FS 6A are presented in Table 3. These site cleanup levels meet or are more stringent than Federal drinking water criteria (MCLs). Verification groundwater monitoring at the site will establish that groundwater cleanup levels in Table 3 have been met.
• Toxic Substances Control Act (TSCA), Section 403	15 USC §§ 2602, 2605(e) (regulation of PCBs); 40 CFR 761.1-761.3 (definitions) & Subparts C (§§ 761.40-.45)(marking of PCBs and PCB items), D (§§ 761.50-.79)(storage and disposal of PCBs), G (§§ 761.120-.135) (PCB spill cleanup policy), J & K (§§761.180-.193, 202-.218)(PCB record keeping, monitoring and reports), N-R (§§ 761.260-.359)(sampling and analysis of PCB waste).	TSCA regulates the use and disposal of various chemicals, including PCBs. Subpart D of 40 CFR Part 761 outlines disposal and cleanup procedures for wastes with a PCB concentration of at least 50 parts per million ("ppm") [40 CFR §§ 761.60-.61] and prohibits the unpermitted discharge of PCBs to navigable waters or a treatment works at more than 3 parts per billion ("ppb") concentration [<i>id.</i> § 761.50(a)(3)]. Certain PCBs in soil must be cleaned up and disposed of in accordance with Section 761.61. Certain liquid PCBs must be incinerated or otherwise disposed of in accordance with Section 761.60(a) or (e) [<i>id.</i> § 761.61(b)]. Subpart G establishes standards for cleanup of certain PCB spills of at least 50 ppm concentration occurring after May 4, 1987. Subparts J and K impose	Relevant and appropriate	Under the recommended remedial action alternative for FS 6A, verification soil samples will be analyzed for the presence of PCBs using EPA Method 8082. The PCB soil cleanup levels are presented in Table 3. In the event that PCBs in soils at concentrations greater than 50ppm are encountered, then the remedial action will comply with the requirements of Subpart D of 40 CFR Part 761 regarding the cleanup and disposal procedures of such soils.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
		notification and reporting requirements under specified circumstances on facilities using or disposing PCBs. TSCA also contains specified requirements for labeling of containers and equipment with PCB-containing materials, and of transport vehicles carrying a certain amount of liquid PCBs (<i>id.</i> § 761.40). Previous soil samples at FS 6 have shown the presence of PCBs. Verification soil samples at FS 6A will be analyzed for the presence of PCBs.		
• Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of TSCA)	15 U.S.C. §2681,2683, and 2688; 40 Code of Federal Regulations (CFR) Section 745.65(c) and 745.227(h)(4) .	66 Fed. Reg. 1206, 1238 (5 January 2001) revised 40 CFR Part 745 to establish a hazard standard of 400 mg/kg lead in bare soil at residential sites and child-occupied facility sites.	Relevant and appropriate	The cleanup levels for FS 6A are presented in Table 3. The lead cleanup level is based on this TSCA value (400 mg/kg), as well as a maximum average concentration of 370 mg/kg, calculated with the Department of Toxic Substances Control (DTSC) Lead Spread model.
• U.S. EPA Office of Solid Waste and Emergency Response (OSWER) Lead Guidance	OSWER Directive #9355.4-12 (Revised Interim Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities, July 1994); OSWER #9200.4-27P (Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, August 27, 1998)	Outlines approach to determining protective levels for lead in soils at CERCLA sites and identifies 400 ppm as screening level for lead in soil for residential land use.	To be considered	The cleanup levels for FS 6A are presented in Table 3. The Trust lead cleanup level is based on ecological protection and is more stringent than the TSCA, HUD and EPA value (400 mg/kg), as well as a maximum average concentration of 370 mg/kg, calculated with the DTSC Lead Spread model.
State ARARs and TBCs				
• California Toxics Rule (CTR)	33 USC §1313(c)(2)(B); 40 CFR §131.38(b)(1), (2)	The California Toxics Rule sets forth freshwater and saltwater criteria for a number of metals and chemical compounds. Groundwater aquifers are known to exist in the subsurface beneath FS 6A.	Applicable	The cleanup levels for FS 6A presented in Table 3 meet or are more stringent than the criteria established in the CTR. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels in Table 3 have been met.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
<ul style="list-style-type: none"> • Regional Water Quality Control Board (RWQCB), San Francisco Bay Basin Water Quality Control Plan (Basin Plan) – Chapter 3: Objectives for Groundwater; Objectives for Surface Waters 	Porter-Cologne Water Quality Control Act promulgated under California Water Code, §13240-13241, Basin Plan, pp. 3-1 to 3-7	Chapter 3 of the Basin Plan sets forth water quality objectives for surface water and groundwater. Groundwater aquifers are known to exist in the subsurface at FS 6A. Groundwater in the vicinity of FS 6A is designated as a potential drinking water source (per State Water Resources Control Board (SWRCB) Resolution 88-63).	Applicable	The cleanup levels for FS 6A presented in Table 3 meet or are more stringent than the criteria established in the Basin Plan. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels in Table 3 have been met.
<ul style="list-style-type: none"> • Domestic Water Quality and Monitoring Regulations 	<p>Health and Safety Code § 116365; 22 CCR §§ 64431, 64432, 64432.1, 64432.2, 64444, 64444.5</p> <p>Health and Safety Code § 116375; 22 CCR § 64449</p>	<p>These sections of the California Code of Regulations, part of the state water quality standards, establish MCLs for organic and inorganic chemicals in drinking water.</p> <p>This section of the Safe Drinking Water Act establishes secondary MCLs for chemicals in drinking water that adversely affect its odor, color, taste, or appearance. They are desirable goals but not enforceable.</p>	<p>Relevant and appropriate where, on a chemical by chemical basis, the standard is more stringent than federal standard</p> <p>To Be Considered</p>	<p>The cleanup levels for FS 6A presented in Table 3 meet or are more stringent than state drinking water criteria (MCLs). Verification groundwater monitoring conducted as part of the groundwater monitoring at the site will establish groundwater cleanup levels have been met.</p> <p>The cleanup level for chloride at FS 6A is based on a secondary MCL and is listed in Table 3. Verification groundwater monitoring conducted as part of the groundwater monitoring at FS 6A will establish that the groundwater cleanup level for chloride has been met.</p>
<ul style="list-style-type: none"> • SWRCB Resolution No. 88-63 	Porter-Cologne Water Quality Control Act promulgated under California Water Code, §13140.	The resolution states that all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply, unless the surface or groundwaters contain total dissolved solids ("TDS") in excess of 3,000 milligrams per liter ("mg/L"), the waters contain high levels of contamination, or the water source does not provide sufficient water to supply a well capable of producing 200 gallons per day. Groundwater aquifers beneath FS 6A represent a potential drinking water source as defined by this Resolution.	Applicable	The cleanup standards of SWRCB Resolution No. 88-63 have been incorporated into Table 3. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels in Table 3 have been met.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
<ul style="list-style-type: none"> RWQCB Order No. 96-070; U.S. Army Corps of Engineers (USACE), Fuel Product Action Level Development Report (FPALDR), Final, Oct. 1995 (soil cleanup levels) 	Porter-Cologne Water Quality Control Act promulgated under California Water Code	Order No. 96-070 includes soil cleanup levels for the protection of human health for a number of carcinogenic and noncarcinogenic polynuclear aromatic hydrocarbons (PAHs) (Table 1), soil cleanup levels for the protection of ecological receptors (Table 2), and soil cleanup levels for the protection of water quality at drinking water standards (Table 4). Soil characterization at FS 6A has detected the presence of petroleum hydrocarbons.	To be considered	The cleanup levels for soil at FS 6A presented in Table 3 meet or are more stringent than Board Order 96-070 Site Cleanup Requirements and FPALDR criteria for petroleum hydrocarbons and associated volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). The remedial action shall include verification soil sampling to ensure that soil left in place meets the soil cleanup levels for FS 6A in Table 3.
<ul style="list-style-type: none"> RWQCB Risk-Based Screening Levels (RBSLs) 	Application of Risk-based Screening Levels and Decision-Making to Sites with Impacted Soil and Groundwater Volume 1: Summary Tier 1 Lookup Tables, interim Final-December 2001	RBSLs can be used to evaluate whether a chemical release may pose a risk that warrants further investigation. RBSLs are considered in the calculation of cleanup levels for VOCs to account for volatilization to indoor air and leaching to groundwater.	To be considered	The cleanup levels for soils at FS 6A presented in Table 3 incorporated RBSLs. Soil verification sampling conducted as part of the remedial action at the site will ensure that Table 3 soil cleanup levels are met.
<ul style="list-style-type: none"> DTSC Lead Spread Computer Model Version 7.0 		A State of California computer model which calculates preliminary remediation goals for lead in soil based on DTSC default factors and exposure assumptions based on planned land-use at the San Francisco Presidio.	To be considered	The cleanup levels for FS 6A are presented in Table 3. The Trust lead cleanup level is based on ecological protection and is more stringent than the TSCA, HUD, and EPA value of 400 mg/kg described above, as well as a maximum average concentration of 370 mg/kg, calculated with the referenced DTSC Lead Spread model.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Location-Specific ARARs and TBCs				
Federal ARARs and TBCs				
• National Historic Preservation Act (NHPA)	16 USC §§ 470–470x-6; 36 CFR §§ 800.1–16, 60.2 (effect of listing in National Register), 65.2 (effect of designation as National Historic Landmark), 68.1–4 (Dept. of Interior [DOI] standards for historic property projects assisted by the National Historic Preservation Fund).	This Act is applicable to the entire Presidio, since it is designated in the National Register as a historic landmark. FS 6A may contain historic or archeological resources, which may be encountered during excavation.	Applicable	Excavation activities at FS 6A will be closely monitored to detect the presence of significant historic or archeological resources. In the event that historic or archeological resources are uncovered in the work area, work will be halted, Trust compliance personnel will be contacted, and the resources will be managed according to the NHPA..
	The Trust Programmatic Agreement	The Programmatic Agreement between the Advisory Council on Historic Preservation, the State Historic Preservation Officer, the Trust and NPS, sets forth the procedures to implement the historic compliance process of Section 106 of the NHPA.	To be considered	The Trust will ensure that historic and archeological resources are managed in compliance with the Act and Programmatic Agreement. FS 6A remediation activities will be reviewed by the Trust for compliance with the agreement. No such resources are known to exist at FS 6A; however, if these are encountered during remediation, they will be managed in accordance with the NHPA and the Programmatic Agreement.
• Archeological Resources Protection Act (ARPA)	16 USC §§ 470aa–470mm; 43 CFR §§ 7.1–37 (DOI regulations for protection of archeological and historical resources)	ARPA prohibits excavation of, damage to, or destruction of archeological resources on public lands without a permit issued by the federal land manager.	Applicable	The procedural permit requirement is not applicable to on-site remedial action. However, the substantive requirements of ARPA apply to excavations affecting archeological resources, Native American resources or artifacts at the Presidio. Compliance with NAGPRA is required under ARPA. If archeological or Native American resources are encountered during remedial actions at FS 6A, they will be managed consistently with the substantive requirements of ARPA.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Federal Endangered Species Act (ESA)	16 USC §§ 1531(c)(1); 1532; 1533(d); 1536(a)–(d), (g), (h); 1538(a)(1)(B), (a)(1)(G), (a)(2)(B), (a)(2)(E); 1539(a), (c), (d); 1540(a)–(c); 50 CFR §§ 11.1–11.26, 13.1–13.29, 402.01–402.16, 424.01–424.21.	Under the ESA, federal agencies must make sure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or cause the destruction or adverse modification of their habitat. Four federal endangered bird species have been recorded as casual visitors to the Presidio and vicinity: American peregrine falcon, bald eagle, California brown pelican, and snowy plover. Five federal endangered plant species have been identified at various locations at the Presidio: Raven's manzanita, Presidio clarkia, Marin dwarf flax, San Francisco lessingia, and California seablight.	Applicable	The Trust will implement actions to ensure protection of endangered species, if encountered at the site, including the implementation of erosion control measures, and installation of protective fencing to keep workers and equipment out of the sensitive habitat area.
• Archeological and Historic Preservation Act (AHPA)	16 USC §§ 469–469c-2; 43 CFR §§ 7.1-3.7 (DOI regulations for protection of archeological and historic resources)	AHPA requires federal agencies, prior to engaging in activities that could cause irreparable loss of scientific, prehistorical, historical, or archeological data, to notify the Secretary of the Interior of the threatened data and the proposed activities, and to preserve the data or request that the Secretary do so. The DOI must conduct a survey and recovery effort if it finds the data are significant and may be irrevocably lost without such action.	Applicable	There is no evidence that scientific, prehistorical, historical, or archeological data will be discovered during the proposed remediation activities. If FS 6A is found to contain evidence of scientific, prehistorical, historical, or archeological data that could be threatened by remedial activities, the Trust will notify the DOI of its planned remedial activities and will protect historic data encountered during remediation activities in accordance with the AHPA.
• Native American Graves Protection and Repatriation Act (NAGPRA)	25 USC §§ 3001-3013; 43 CFR §§ 10.1-17	NAGPRA establishes a system for determining ownership and proper disposal/removal of Native American cultural items discovered in federal lands and requires inventorying and identification of those items. Such items must be returned to the relevant tribe.	Applicable	The Trust will ensure that Native American cultural items discovered will be handled in accordance with the requirements of NAGPRA. However, there is no evidence that Native American cultural items will be threatened by the proposed remediation activities.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Migratory Bird Treaty Act	16 USC §§ 703–708; 50 CFR §§ 10.12, 10.13.	The Act prohibits the taking of migratory birds, their nests and their eggs, unless permitted by the Secretary of the Interior. Migratory birds have been observed at the Presidio.	Applicable	If tree removal or other actions that would impact migratory birds' nests and eggs are required to remediate FS 6A, such work will be conducted with precautions to ensure no taking of migratory birds, their nests or eggs.
• Presidio Trust Act	The Presidio Trust Act, Section 104(a) of Public Law 104-333 as amended; 16 U.S.C §460bb appendix.	The Trust shall manage the leasing, maintenance, rehabilitation, repair, and improvement of property within the Presidio under its administrative jurisdiction using the authorities provided in this section, which shall be exercised in accordance with the purposes set forth in Section 1 of the act, entitled "An Act to establish the Golden Gate National Recreation Area in the State of California, and for other purposes," approved 27 October 1972 (Public Law 92-589; 86 Stat. 1299; 16 USC 460bb), and in accordance with the general objectives of the General Management Plan for the Presidio. Resolution 99-11 of the Presidio Trust Act sets forth the general objectives which are not explicit in the General Management Plan Amendment.	Applicable	The Trust will manage remedial actions and protect park resources at FS 6A in accordance with Trust Act Section 104(a) and Trust Board Resolution 99-11.
• Golden Gate National Recreation Area (GGNRA) Act, Section 1 (Purpose)	16 USC § 460bb–460bb-5	Among the purposes stated in Section 1 of the GGNRA Act are to preserve the recreation area, to the degree possible, in its natural setting, and protect it from development and uses that would destroy the scenic beauty and natural character of the area. These purposes are applicable to Area B under the Presidio Trust Act and to Area A. The Presidio is part of the GGNRA.	Applicable	The Trust will protect the scenic beauty and natural character of the area during the FS 6A remedial action. The cleanup actions will be consistent with Section 1 of the GGNRA Act (16 USC 460bb).

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
<ul style="list-style-type: none"> National Park Service Management Policies 2001 	Sections 4.4.1 (General Principles for Managing Biological Resources), 4.4.1.2 (Genetic Resource Management Principles), 4.4.2.2 (Restoration of Native Plant and Animal Species), 4.4.2.4 (Management of Natural Landscapes), 4.4.2.5 (Maintenance of Altered Plant Communities), 4.4.4 (Management of Exotic Species), 4.4.4.2 (Removal of Exotic Species Already Present)	The NPS management policies contain Natural Resource Management preservation policies aimed at maintaining park natural resources in an unimpaired condition. The NPS Management Policies are to be considered for FS 6A.	To be considered	The Trust will protect park resources in accordance with the NPS Management Policies during remedial actions at FS 6A.
<ul style="list-style-type: none"> General Management Plan Amendment (GMPA) as implemented by the Vegetation Management Plan (VMP) 	<i>National Park Service, Creating a Park for the 21st Century, from Military Post to National Park</i> (1994), pp. 36–41, 54, 100–103, and 108–109, and <i>Presidio of San Francisco Vegetation Management Plan and Environmental Assessment</i> , December 2001	The VMP guides the management of vegetative resources within the Presidio, including enhancing, restoring, and rehabilitating native and planted vegetation at the Presidio. The VMP establishes the vegetative schemes for the Presidio.	To be considered	The Trust will complete the remediation of FS 6A in a manner consistent with the VMP. Native plants and other landscape cover will be planted to stabilize and control erosion at FS 6A.
<ul style="list-style-type: none"> Presidio Trust Management Plan (PTMP) 	Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco, California	The PTMP provides the overall land use plan for Area B of the Presidio.	To be considered	The Trust will complete the remediation of FS 6A in accordance with the PTMP.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
State ARARs and TBCs				
• Basin Plan, Wetlands Protection Management	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan, pp. 4-49 to 4-51	The Basin Plan reaffirms the goal of the California Wetlands Conservation Policy of ensuring no net loss of wetlands.	Applicable	In accordance with the Basin Plan, FS 6A remedial activities will avoid destruction, net loss, or adverse impacts to wetlands to the extent possible.
• California Endangered Species Act (CESA)	Cal. Fish & Game Code §§ 2053–2054, 2081, 2080.1, 2081.1; 14 CCR §§ 670.2, 670.5, 783.1–783.6; Cal. Fish & Game Code § 2014.	The California ESA provides authority similar to the federal ESA for the protection of threatened and endangered species listed by the State. Six California endangered plant species have been identified at the Presidio: San Francisco spineflower, Franciscan thistle, dune gilia, San Francisco gum plant, San Francisco campion, and San Francisco owl's clover. One California endangered bird species, the willow flycatcher, has been identified at the Presidio.	Applicable	There are no known locations of California endangered plant species at FS 6A. In the unlikely event that protected plant or bird species are discovered during the remedial action at FS 6A, the Trust will implement actions to protect endangered species. Protections may include fencing areas and other appropriate precautions. The Trust will also implement erosion control measures, as needed, to ensure that remedial actions do not jeopardize critical habitat.
• Cal. Fish & Game Code regarding protection of birds, mammals, reptiles, or amphibia	Cal. Fish & Game Code §§ 3503, 3503.5, 3511, 3513; 14 CCR § 747	The California Fish & Game Code prohibits taking, possessing, or destroying certain birds, their nests, and their eggs. Migratory and other birds have been observed at the Presidio. Remedial actions that include removal of trees that may provide nests for migratory birds may require additional review.	Applicable	Tree removal will not occur during the nesting season. If any of the protected birds, mammals, reptiles, or amphibia are encountered during implementation of the FS 6A remedial action, the Trust will ensure their protection consistent with the pertinent provisions of the Cal. Fish & Game Code.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Action-Specific ARARs and TBCs				
Federal ARARs and TBCs: None				
State ARARs and TBCs				
• Basin Plan-- Chapter 4.; Effluent Limitations Discharge of Treated Groundwater Table 4-1: Discharge Prohibitions	Porter-Cologne Water Quality Control Act promulgated under California Water Code §13240-13241, Basin Plan, pages 4-8 to 4-11 Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan, pp. 4-17 to 4-18; Table 4-1	Limitations to construction-related stormwater discharges are described in this provision. Table 4-1 more broadly describes discharge prohibitions (e.g., with respect to toxic substances, solid wastes, silt, sediments, oil, and petroleum by-products). Page 4-17 of the Basin Plan refers to State Water Quality Control Board (SWRCB) Resolution No. 88-160, Disposal of Extracted Groundwater from Cleanup Projects, which urges dischargers of groundwater extracted from site clean-up projects to reclaim their effluent. It states that when reclamation is not feasible, discharges must be piped to a municipal treatment plant or discharged under a National Pollutant Discharge Elimination System (NPDES) permit authorizing the discharge from these sites.	Applicable Applicable	Remediation efforts at FS 6A will not likely include stormwater discharge. However, any remediation-related stormwater discharges will use controls to reduce pollutant loads in stormwater in a manner that will not adversely impact groundwater or surface water, in accordance with the Basin Plan. Remediation efforts at FS 6A will not likely include groundwater extraction or the need for disposal of treated groundwater. If groundwater discharge of remediation dewatering falls within the scope of these regulations, the discharge will be in accordance with the Basin Plan. However, construction dewatering will likely be discharged to a publicly owned treatment works (POTW) and must meet the requirements of the City and County of San Francisco Sanitary Sewer Discharge Order (see below).

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Stormwater Discharges	Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan pp. 4-14 to 4-15	The Stormwater Discharges program is regulated by the Regional Board for certain municipal, industrial, and construction stormwater discharges through NPDES permits. NPDES permits include requirements to prevent or reduce discharges of pollutants that cause or contribute to violations of water quality objectives.	Applicable	In accordance with the Basin Plan, any construction stormwater discharges will use controls to reduce pollutant loads in stormwater in order to prevent violations of water quality objectives.
Surface Water Protection	Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan pp. 4-28, 4-32, 4-40 to 4-41	Surface Water Protection and Management through nonpoint source control is regulated by the RWQCB. The Construction Activity Control Program requires an NPDES permit for construction activities involving disturbance of one acres or greater total land area. Permit conditions address pollutant and waste discharges occurring during construction activities and the discharge of pollutants in runoff after construction. The Erosion and Sediment Control program establishes guidelines for the regulation of erosion and sedimentation for the protection of beneficial uses of water due to the impairment by sediment.	Applicable	Erosion control measures in accordance with the Basin Plan are part of the planned remediation actions to be implemented at FS 6A.
Cleanup of Polluted Sites	Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan, pp. 4-17 to 4-18; Table 4-1, pp. 4-58 to 4-59 and 4-62 to 4-63.	pp. 4-58 to 4-59 discuss the Regional Board's strategies for setting groundwater and soil cleanup levels.	Applicable	Cleanup levels for FS 6A are those derived in the Presidio-wide Cleanup Level Document, as updated, which incorporate values from the Basin Plan and RWQCB orders. Verification soil sampling at excavations and groundwater sampling will be performed to ensure that cleanup levels are met. The cleanup levels for FS 6A are listed in Table 3.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
State Water Resources Control Board (SWRCB) Resolution No. 92-49	Porter-Cologne Water Quality Control Act promulgated under California Water Code	Resolution 92-49 establishes policies and procedures for investigating and remediating chemical releases that affect or threaten water quality.	Relevant and appropriate	The Trust will follow the requirements of Resolution 92-49 in the preparation of planning documents and the implementation of remedial action for FS 6A. .
• Hazardous Waste Requirements-- Generation, Transport, and Disposal Regulations	State of California citation: Cal. Health & Safety Code §§ 25100–25249, 25250–25250.26, 25260–25929; 22 CCR §§ 66260.1–68500.35. Federal citation: 42 USC §§ 6901–6991i; 40 CFR Parts 260–282. §§ 25100–25166.5, 25179.1–12 (land disposal restrictions [LDRs]), 25244–25244.24 (waste reduction and recycling); 22 CCR §§ 66260.10–66262.41, 66264.1–172, 66265.16–199; 66268.10–44, .105–113 (LDRs + treatment standards); 49 CFR Parts 172, 173, 178, 179 (transportation) [incorporated by reference]	Pursuant to 42 USC § 7926, the State of California is authorized to implement the federal Resource Conservation and Recovery Act (RCRA) Program. Federal statutes may apply to areas not covered by the state program, or where incorporated by reference. FS 6A remedial action may include off-site transportation and disposal of hazardous wastes.	Applicable	All hazardous wastes generated in the excavation of FS 6A will be stored, handled, and transported in accordance with the pertinent provisions of these requirements. The Trust will also comply with requirements for proper recordkeeping.
• Medical Waste Handling Requirements	Cal. Health and Safety Code 117600–118360; SF Municipal Health Code §§ 1501–1514	Medical waste is required to undergo certain treatment requirements prior to disposal so that it can be characterized as a “solid” waste. Without such treatment, land disposal of medical waste is not permitted.	Relevant and appropriate	If medical waste is encountered, it will be managed in compliance with the Act. Based on existing site data, medical waste is not expected to be encountered during excavation at the site.
• Solid (Non-Hazardous) Waste Requirements	Cal.Pub. Res. Code §40000–40201, 43000–44820; 27 CCR §§ 20005–20278	These requirements govern off-site disposal of nonhazardous solid waste and closure and postclosure of solid waste management units.	Relevant and appropriate	The transport and disposal of nonhazardous waste generated from the remediation of FS 6A will be performed in accordance with the pertinent sections of Title 27.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Clean Closure Requirements	27 CCR § 20380(d)(2);27 CCR § 21090(f); CCR § 21410	For clean closure, all waste, waste residues, contaminated containment systems components, contaminated subsoils, and all other contaminated materials are removed or decontaminated at closure pursuant to the specific requirements for landfills, etc. Clean closure renders the landfill no longer a threat to water quality.	Relevant and appropriate	The remedial action for FS 6A consists of a clean closure which include the removal of contaminated soil and debris until cleanup levels in Table 3 are achieved.
Inert Waste Requirements	27 CCR § 20230	Inert waste is a subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste. Inert wastes do not need to be discharged at classified units.	Relevant and appropriate	Some materials encountered at FS 6A may meet the definition of inert. If so, such materials can be handled as inert waste and need not be disposed at a classified disposal unit..
• Federal Clean Air Act, certain Bay Area Air Quality Management District (BAAQMD) Regulations	BAAQMD Regulations (see citations below)	Implementation of federal Clean Air Act requirements has been delegated, in part, to the State of California. The BAAQMD is the local implementing agency. Where BAAQMD requirements have been incorporated into the State Implementation Plan and approved by EPA, they are federally-enforceable. Where BAAQMD requirements have not been incorporated into the SIP and approved by EPA, they are not federally enforceable.	Relevant and appropriate	Remedial actions at FS 6A will be conducted in accordance with the substantive requirements of the cited BAAQMD regulations.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Air Requirements	BAAQMD Regulation 6	Regulation 6 limits emissions of particulates. Excavation activities at FS 6A may result in particulate emissions. Regulation 6 is not SIP-approved and is not a federally enforceable requirement.	Relevant and appropriate	Dust suppression measures will be implemented during the performance of the remedial action at FS 6A in compliance with the pertinent provisions of these rules.
Air Requirements	BAAQMD Regulation 7; Regulation 8, Rule 40; and Regulation 9, Rule 2.	These requirements regulate the emission of odorous substances, organic compounds, and hydrogen sulfide.	Relevant and appropriate	A site-specific Health and Safety Plan will be prepared and will address potential emission of odorous substances, organic compounds, and hydrogen sulfide.
Air Requirements	BAAQMD Regulation 8, Rule 15	BAAQMD Regulation 8, Rule 15 prohibits the use of certain types of liquid and emulsified asphalts (those that would emit large amounts of organic compounds). This rule was approved into the SIP on 22 March 1995, as amended by BAAQMD on 1 June 1994.	Relevant and appropriate	The Trust will comply with this regulation if asphalt paving is used to repair road surfaces after excavation of FS 6A.
• California prohibitions on polluting waters of the State	Cal. Fish & Game Code § 5650	Cal. Fish & Game Code § 5650(a) prohibits depositing enumerated substances, including “any substance or material deleterious to fish, plant life, or bird life” into the waters of the state.	Relevant and appropriate	The Trust will implement erosion control measures to contain runoff from the site so that site soil is not transported to waters of the state in accordance with this requirement.
• California restrictions on means of taking birds or mammals	Cal. Fish & Game Code § 3005	Section 3005 of the Cal. Fish & Game Code prohibits taking birds or mammals with “any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken,” except as provided in the Fish & Game Code.	Relevant and appropriate	If the FS 6A remedial action involves the “take” of any bird or mammal (although considered an unlikely event), the Trust will comply with the requirements of this section.

Table 1
Applicable Relevant and Appropriate Requirements (ARARs)
Fill Site 6A
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
<ul style="list-style-type: none"> • City and County of San Francisco Sanitary Sewer Discharge Order 	San Francisco Municipal Code: Public Works Code, Article 4.1, Industrial Waste, §§ 119, 123(a)–(c), 123(h), 123(i), 124–127	The City of San Francisco order is an industrial pretreatment permit which implements the State Water Code. Discharge to the sewer of groundwater from dewatering must meet these requirements.	To be Considered	The Presidio Trust's order from the City of San Francisco applies to discharges of wastewater to the sanitary sewer. This includes groundwater from dewatering or decontamination activities, if necessary, during remediation of FS 6A.

Notes

a The recommended alternative for FS 6A, Alternative 5, consists of: (a) excavating and removing PCB- and metal-contaminated fill soils and debris within the FS 6A site; (b) segregation of uncontaminated soil and inert construction debris for recycling, as practicable; (c) confirmation soil sampling for soil COCs to confirm that applicable soil clean-up levels have been achieved; (d) off-site disposal of contaminated soils and debris at a permitted waste management facility; and, (e) three years of post-clean-closure groundwater monitoring.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Chemical-Specific ARARs and TBCs				
Federal ARARs and TBCs				
• Safe Drinking Water Act (SDWA)	42 USC § 300g-1	The National Contingency Plan (NCP) at 40 CFR §§300.43(e)(2)(i)(B)-(D) states that maximum contaminant level goals (MCLGs), established under the SDWA, that are set at levels above zero should be attained by remedial actions for surface water or groundwater that are current or potential sources of drinking water. For contaminants of concern (COCs) in groundwater at BBDA 3 that do not have MCLGs, or if the MCLGs have been set at zero, the remedial actions should achieve Maximum Contaminant Levels (MCLs). No Further Action is proposed for groundwater at BBDA 4.	Relevant and appropriate	The cleanup levels for BBDA 3 are presented in Table 4. These site cleanup levels meet or are more stringent than Federal drinking water criteria (MCLs). Verification groundwater monitoring at BBDA 3 will establish that groundwater cleanup levels in Table 4 have been met.
• Toxic Substances Control Act (TSCA), Section 403	15 USC §§ 2602, 2605(e) (regulation of PCBs); 40 CFR 761.1-761.3 (definitions) & Subparts C (§§ 761.40-.45)(marking of PCBs and PCB items), D (§§ 761.50-.79)(storage and disposal of PCBs), G (§§ 761.120-.135) (PCB spill cleanup policy), J & K (§§761.180-.193, 202-.218)(PCB record keeping, monitoring and reports), N-R (§§ 761.260-.359)(sampling and analysis of PCB waste).	TSCA regulates the use and disposal of various chemicals, including PCBs. Subpart D of 40 CFR Part 761 outlines disposal and cleanup procedures for wastes with a PCB concentration of at least 50 parts per million (“ppm”)[40 CFR §§ 761.60-.61] and prohibits the unpermitted discharge of PCBs to navigable waters or a treatment works at more than 3 parts per billion (“ppb”) concentration [<i>id.</i> § 761.50(a)(3)]. Certain PCBs in soil must be cleaned up and disposed of in accordance with Section 761.61. Certain liquid PCBs must be incinerated or otherwise disposed of in accordance with Section 761.60(a) or (e) [<i>id.</i> § 761.61(b)]. Subpart G establishes standards for cleanup of certain PCB spills of at least	Relevant and appropriate	Under the recommended remedial action alternative for BBDA 3, verification soil samples will be analyzed for the presence of PCBs using EPA Method 8082. The PCB soil cleanup levels are presented in Table 4. In the event that PCBs in soils at concentrations greater than 50ppm are encountered, then the remedial action will comply with the requirements of Subpart D of 40 CFR Part 761 regarding the cleanup and disposal procedures of such soils. PCBs have not been detected at BBDA 4.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Residential Lead-Based Paint Hazard Reduction Act of 1992 (Title X of TSCA)	15 U.S.C. §2681,2683, and 2688; 40 Code of Federal Regulations (CFR) Section 745.65(c) and 745.227(h)(4) .	<p>50 ppm concentration occurring after May 4, 1987. Subparts J and K impose notification and reporting requirements under specified circumstances on facilities using or disposing PCBs. TSCA also contains specified requirements for labeling of containers and equipment with PCB-containing materials, and of transport vehicles carrying a certain amount of liquid PCBs (<i>id.</i> § 761.40). Previous soil samples at BBDA 3 have shown the presence of PCBs. Verification soil samples at BBDA 3 will be analyzed for the presence of PCBs.</p> <p>66 Fed. Reg. 1206, 1238 (5 January 2001) revised 40 CFR Part 745 to establish a hazard standard of 400 mg/kg lead in bare soil at residential sites and child-occupied facility sites.</p>	Relevant and appropriate	The cleanup levels for BBDA 3 and 4 are presented in Tables 4 and 5, respectively. The human health residential lead cleanup level is based on this TSCA value (400 mg/kg), as well as a maximum average concentration of 370 mg/kg, calculated with the Department of Toxic Substances Control (DTSC) Lead Spread model.
• U.S. EPA Office of Solid Waste and Emergency Response (OSWER) Lead Guidance	OSWER Directive #9355.4-12 (Revised Interim Soil Lead Guidance for CERCLA sites and RCRA Corrective Action Facilities, July 1994); OSWER #9200.4-27P (Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, August 27, 1998)	Outlines approach to determining protective levels for lead in soils at CERCLA sites and identifies 400 ppm as screening level for lead in soil for residential land use.	To be considered	The cleanup levels for BBDA 3 and 4 are presented in Tables 4 and 5, respectively. The Trust lead cleanup level is based on ecological protection and is more stringent than the TSCA, HUD and EPA value (400 mg/kg), as well as a maximum average concentration of 370 mg/kg, calculated with the DTSC Lead Spread model.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
State ARARs and TBCs				
• California Toxics Rule (CTR)	33 USC §1313(c)(2)(B); 40 CFR §131.38(b)(1), (2)	The California Toxics Rule sets forth freshwater and saltwater criteria for a number of metals and chemical compounds. Groundwater aquifers are expected to exist in the subsurface beneath BBDA 3. No Further Action is proposed for groundwater at BBDA 4.	Applicable	The cleanup levels for BBDA 3 presented in Table 4 meet or are more stringent than the criteria established in the CTR. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels required by Table 4 have been met.
• Regional Water Quality Control Board (RWQCB), San Francisco Bay Basin Water Quality Control Plan (Basin Plan) – Chapter 3: Objectives for Groundwater; Objectives for Surface Waters	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan, pp. 3-1 to 3-7	Chapter 3 of the Basin Plan sets forth water quality objectives for surface water and groundwater. Groundwater aquifers are known to exist in the subsurface at BBDA 3. Groundwater in the vicinity of BBDA 3 and BBDA 4 is designated as a potential drinking water source (per State Water Resources Control Board (SWRCB) Resolution 88-63).	Applicable	The cleanup levels for BBDA 3 presented in Table 4 meet or are more stringent than the criteria established in the Basin Plan. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels in Table 4 have been met. No Further Action is proposed for groundwater at BBDA 4.
• Domestic Water Quality and Monitoring Regulations	Health and Safety Code § 116365; 22 CCR §§ 64431, 64432, 64432.1, 64432.2, 64444, 64444.5	These sections of the California Code of Regulations, part of the state water quality standards, establish MCLs for organic and inorganic chemicals in drinking water.	Relevant and appropriate where, on a chemical by chemical basis, the standard is more stringent than federal standard	The cleanup levels for BBDA 3 presented in Table 4 meet or are more stringent than state drinking water criteria (MCLs). Verification groundwater monitoring conducted as part of the groundwater monitoring at the site will establish groundwater cleanup levels have been met. No Further Action is proposed for groundwater at BBDA 4.
	Health and Safety Code § 116375; 22 CCR § 64449	This section of the Safe Drinking Water Act establishes secondary MCLs for chemicals in drinking water that adversely affect its odor, color, taste, or appearance. They are desirable goals but not enforceable.	To-Be-Considered	The cleanup level for chloride at BBDA 3 is based on a secondary MCL and is listed in Table 4. Verification groundwater monitoring conducted as part of the groundwater monitoring at BBDA 3 will establish that the groundwater cleanup level for chloride has been met

Table 2
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Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• SWRCB Resolution No. 88-63	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13140.	The resolution states that all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply, unless the surface or groundwaters contain total dissolved solids ("TDS") in excess of 3,000 milligrams per liter ("mg/L"), the waters contain high levels of contamination, or the water source does not provide sufficient water to supply a well capable of producing 200 gallons per day. Groundwater aquifers beneath BBDA 3 and BBDA 4 represent a potential drinking water source as defined by this Resolution.	Applicable	The cleanup standards of SWRCB Resolution No. 88-63 have been incorporated into Table 4. Verification groundwater monitoring conducted as part of the remedial action at the site will establish that groundwater cleanup levels in Table 4 have been met. No Further Action is proposed for groundwater at BBDA 4.
• RWQCB Order No. 96-070; U.S. Army Corps of Engineers (USACE), Fuel Product Action Level Development Report (FPALDR), Final, Oct. 1995 (soil cleanup levels)	Porter-Cologne Water Quality Control Act promulgated under California Water Code	Order No. 96-070 includes soil cleanup levels for the protection of human health for a number of carcinogenic and noncarcinogenic polynuclear aromatic hydrocarbons (PAHs) (Table 1), soil cleanup levels for the protection of ecological receptors (Table 2), and soil cleanup levels for the protection of water quality at drinking water standards (Table 4). Soil characterization at BBDA 3 has detected the presence of petroleum hydrocarbons.	To be considered	The cleanup levels for soil at BBDA 3 and 4 presented in Tables 4 and 5, respectively, meet or are more stringent than Board Order 96-070 Site Cleanup Requirements and FPALDR criteria for petroleum hydrocarbons and associated volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). The remedial action shall include verification soil sampling to ensure that soil left in place meets the soil cleanup levels for BBDA 3 and BBDA 4 in Tables 4 and 5, respectively.
• RWQCB Risk-Based Screening Levels (RBSLs)	Application of Risk-based Screening Levels and Decision-Making to Sites with Impacted Soil and Groundwater Volume 1: Summary Tier 1 Lookup Tables, interim Final-December 2001	RBSLs can be used to evaluate whether a chemical release may pose a risk that warrants further investigation. RBSLs are considered in the calculation of cleanup levels for VOCs to account for volatilization to indoor air and leaching to groundwater.	To be considered	The cleanup levels for soils at BBDA 3 and 4, presented in Tables 4 and 5, respectively, incorporated RBSLs. Soil verification sampling conducted as part of the remedial action at the site will ensure that Table 4 and Table 5 soil cleanup levels are met.

Table 2
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Baker Beach Disturbed Areas 3 and 4
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• DTSC Lead Spread Computer Model Version 7.0		A State of California computer model which calculates preliminary remediation goals for lead in soil based on DTSC default factors and exposure assumptions based on planned land-use at the San Francisco Presidio.	To be considered	The cleanup levels for BBDA 3 and 4 are presented in Tables 4 and 5, respectively. The Trust lead cleanup level is based on ecological protection and is more stringent than the TSCA, HUD, and EPA value of 400 mg/kg described above, as well as a maximum average concentration of 370 mg/kg, calculated with the referenced DTSC Lead Spread model.

Location-Specific ARARs and TBCs

Federal ARARs and TBCs				
• National Historic Preservation Act (NHPA)	16 USC §§ 470–470x-6; 36 CFR §§ 800.1–16, 60.2 (effect of listing in National Register), 65.2 (effect of designation as National Historic Landmark), 68.1–4 (Dept. of Interior [DOI] standards for historic property projects assisted by the National Historic Preservation Fund).	This Act is applicable to the entire Presidio, since it is designated in the National Register as a historic landmark. BBDA 3 or 4 may contain historic or archeological resources, which may be encountered during excavation.	Applicable	Excavation activities at BBDA 3 and 4 will be closely monitored to detect the presence of significant historic or archeological resources. In the event that historic or archeological resources are uncovered in the work area, work will be halted, appropriate compliance personnel will be contacted, and the resources will be managed according to the NHPA.
	The NPS Programmatic Agreement	The Programmatic Agreement for the Presidio between the NPS and the State Historic Preservation Officer (“SHPO”), dated August 31, 1994, states that the Presidio of San Francisco shall manage and preserve its historic properties consistent with good historic preservation management and stewardship and sets forth the procedures to implement the historic compliance process of Section 106 of the NHPA.	To be considered	The Trust will ensure that historic and archeological resources are managed in compliance with the Act and Programmatic Agreement. BBDA 3 and 4 remediation activities will be reviewed by NPS for compliance with the agreement. No such resources are known to exist at BBDA 3 or BBDA 4; however, if these are encountered during remediation, they will be managed in accordance with the NHPA and the Programmatic Agreement.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Archeological Resources Protection Act (ARPA)	16 USC §§ 470aa–470mm; 43 CFR §§ 7.1–.37 (DOI regulations for protection of archeological and historical resources)	ARPA prohibits excavation of, damage to, or destruction of archeological resources on public lands without a permit issued by the federal land manager.	Applicable	The procedural permit requirement is not applicable to on-site remedial action. However, the substantive requirements of ARPA apply to excavations affecting archeological resources, Native American resources or artifacts at the Presidio. Compliance with NAGPRA is required under ARPA. If archeological or Native American resources are encountered during remedial actions at BBDA 3 or 4, they will be managed consistently with the substantive requirements of ARPA.
• Federal Endangered Species Act (ESA)	16 USC §§ 1531(c)(1); 1532; 1533(d); 1536(a)–(d), (g), (h); 1538(a)(1)(B), (a)(1)(G), (a)(2)(B), (a)(2)(E); 1539(a), (c), (d); 1540(a)–(c); 50 CFR §§ 11.1–11.26, 13.1–13.29, 402.01–402.16, 424.01–424.21.	Under the ESA, federal agencies must make sure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or cause the destruction or adverse modification of their habitat. Four federal endangered bird species have been recorded as casual visitors to the Presidio and vicinity: American peregrine falcon, bald eagle, California brown pelican, and snowy plover. Five federal endangered plant species have been identified at various locations at the Presidio: Raven's manzanita, Presidio clarkia, Marin dwarf flax, San Francisco lessingia, and California seablight.	Applicable	The Trust completed a Section 7(a)(4) consultation with the U.S. Fish and Wildlife Service with respect to the recommended alternative at BBDA 3. The USFWS concluded that the proposed remediation is not likely to adversely affect Federally listed species. However, the Trust will implement actions to ensure protection of endangered species including the implementation of erosion control measures, and installation of protective fencing to keep workers and equipment out of the sensitive habitat area.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Archeological and Historic Preservation Act (AHPA)	16 USC §§ 469–469c-2; 43 CFR §§ 7.1-3.7 (DOI regulations for protection of archeological and historic resources)	AHPA requires federal agencies, prior to engaging in activities that could cause irreparable loss of scientific, prehistorical, historical, or archeological data, to notify the Secretary of the Interior of the threatened data and the proposed activities, and to preserve the data or request that the Secretary do so. The DOI must conduct a survey and recovery effort if it finds the data are significant and may be irrevocably lost without such action.	Applicable	There is no evidence that scientific, prehistorical, historical, or archeological data will be discovered during the proposed remediation activities. If BBDA 3 or BBDA 4 is found to contain evidence of scientific, prehistorical, historical, or archeological data that could be threatened by remedial activities, the Trust will notify the DOI of its planned remedial activities and will protect historic data encountered during remediation activities, in accordance with the AHPA.
• Native American Graves Protection and Repatriation Act (NAGPRA)	25 USC §§ 3001-3013; 43 CFR §§ 10.1-17	NAGPRA establishes a system for determining ownership and proper disposal/removal of Native American cultural items discovered in federal lands and requires inventorying and identification of those items. Such items must be returned to the relevant tribe.	Applicable	The Trust will ensure that Native American cultural items discovered will be handled in accordance with the requirements of NAGPRA. However, there is no evidence that Native American cultural items will be threatened by the proposed remediation activities.
• Migratory Bird Treaty Act	16 USC §§ 703–708; 50 CFR §§ 10.12, 10.13.	The Act prohibits the taking of migratory birds, their nests and their eggs, unless permitted by the Secretary of the Interior. Migratory birds have been observed at the Presidio.	Applicable	Tree removal or other actions that would impact migratory bird's nests and eggs required to remediate BBDA 3 and 4 will be conducted with precautions to ensure no taking of migratory birds, their nests or eggs.
• National Park Service (NPS) Organic Act	16 USC §§ 1 et seq.	The NPS Organic Act is intended to protect and conserve park resources and to provide for the enjoyment of those resources in a manner that will leave them unimpaired for future generations. The Act requires NPS to administer use of national parkland in a manner that conserves the scenery and natural and historic objects and wildlife therein. Also, Section 19jj states that a person who destroys, causes the loss of, or injures any park system resource is liable to the U.S. for response costs and damages.	Applicable	The Trust will protect park resources in accordance with the NPS Organic Act while performing remedial actions at BBDA 3 and 4.

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Baker Beach Disturbed Areas 3 and 4
 Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Golden Gate National Recreation Area (GGNRA) Act	16 USC § 460bb–460bb-5	Among the purposes stated in Section 1 of the GGNRA Act are to preserve the recreation area, to the degree possible, in its natural setting, and protect it from development and uses that would destroy the scenic beauty and natural character of the area. The GGNRA Act as a whole contains other general directives and is applicable to Area A of the Presidio.	Applicable	The Trust will protect the scenic beauty and natural character of the area during the BBDAs 3 and 4 remedial action. The cleanup actions will be consistent with the GGNRA Act (16 USC 460bb-460bb-5).
• National Park Service Management Policies 2001	Sections 4.4.1 (General Principles for Managing Biological Resources), 4.4.1.2 (Genetic Resource Management Principles), 4.4.2.2 (Restoration of Native Plant and Animal Species), 4.4.2.4 (Management of Natural Landscapes), 4.4.2.5 (Maintenance of Altered Plant Communities), 4.4.4 (Management of Exotic Species), 4.4.4.2 (Removal of Exotic Species Already Present)	The NPS management policies contain Natural Resource Management preservation policies aimed at maintaining park natural resources in an unimpaired condition. The NPS Management Policies are to be considered for BBDAs 3 and 4.	To be considered	The Trust will protect park resources in accordance with the NPS Management Policies during remedial actions at BBDAs 3 and 4.
• General Management Plan Amendment (GMPA)	<i>National Park Service, Creating a Park for the 21st Century, from Military Post to National Park</i> (1994)	The GMPA provides the overall land use plan for Area A of the Presidio.	To be considered	The Trust will complete the remediation of BBDAs 3 and 4 in a manner consistent with land uses established by the GMPA.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• Vegetation Management Plan (VMP)	<i>Presidio of San Francisco Vegetation Management Plan and Environmental Assessment</i> , December 2001	The VMP guides the management of vegetative resources within the Presidio, including enhancing, restoring, and rehabilitating native and planted vegetation at the Presidio. The VMP establishes the vegetative schemes for the Presidio.	To be considered	The Trust will complete the remediation of BBDA 3 and BBDA 4 in a manner consistent with the VMP. BBDA 3 and 4 will be restored to Coastal Bluffs.
• Memorandum of Agreement between the Presidio Trust and NPS (Area A MOA)	The Memorandum of Agreement for Environmental Remediation of Presidio of San Francisco Area A Property (Area A MOA), Sections 4, 5, and 6.1.	Section 4 of the Area A MOA, Remedial Action Selection, sets forth standards for selection of final remedial actions. Section 5 of the Area A MOA guides the Presidio Trust's design and implementation of remedial actions. Section 6.1 guides the Presidio Trust's operation and maintenance and closure requirements.	To be considered	For BBDA 3 and 4 remedial actions, the Trust will comply with the Area A MOA.
• Federal Coastal Zone Management Act (CZMA); California Government Code, title 7.2 (including McAteer-Petris Act); San Francisco Bay Conservation and Development Commission's (BCDC) San Francisco Bay Plan.	16 USC 1453, 1456; Cal. Gov. Code 66602.1, 66605, 66632; Cal. Code Regs., title 14 10300-10316; BCDC's San Francisco Bay Plan's water Quality Policies (pp.10-11), Recreation Policies (pp. 32-35), Public Access Policies (pp.36-37)	Remedial actions performed in areas under the jurisdiction of BCDC (e.g., within 100 feet of the Bay) must comply with the CZMA and BCDC's San Francisco Bay Plan. Activities that place fill, extract materials, or make substantial changes in use of any water, land or structure within BCDC's jurisdiction require a permit. BCDC's policies include: protecting and increasing wetlands, maintenance of Bay water quality, protecting the Bay through erosion control, minimizing the impact of polluted runoff from projects, increasing recreational opportunities adjacent to the Bay, and providing maximum public access to the Bay.	Applicable	The procedural permit requirement is not applicable to on-site remedial action. Cleanup activities within 100 feet of the shoreline will be performed consistent with the substantive requirements of the Bay Plan policies.
• Marine Mammal Protection Act (MMPA)	16 USC 1362, 1371-75a, 1377	The MMPA prohibits the taking of marine mammals, including on land, unless certain requirements are met (16 USC 1372(2)(A)).	Applicable	Cleanup activities will be performed in accordance with the pertinent provisions of the MMPA.

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Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
<ul style="list-style-type: none"> Federal wetlands regulations and state wetland policy 	Executive Order 11990; 40 CFR § 6.302.(a), (d), (g); Fish & Game Commission's Wetlands Policy	Executive Order 11990 requires federal agencies conducting certain activities to avoid, to the extent possible, adverse impacts associated with the destruction or loss of wetlands. The California Fish & game Commission's wetlands policy instructs the Department of Fish & Game to recommend protection, preservation, restoration, enhancement and expansion of wetlands when the Dept. of Fish & Game acts in an advisory role. The Trust and NPS have mapped Presidio wetlands. Wetlands habitat exists at BBDA 3.	Executive Order-Relevant and appropriate Wetlands Policy – To be considered	At BBDA 3 and 4, the remedial activities will avoid destruction, loss, or adverse impacts to wetlands to the extent possible.
State ARARs and TBCs				
<ul style="list-style-type: none"> Basin Plan, Wetlands Protection Management 	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan, pp. 4-49 to 4-51	The Basin Plan reaffirms the goal of the California Wetlands Conservation Policy of ensuring no net loss of wetlands.	Applicable	In accordance with the Basin Plan, remedial activities at BBDA 3 and 4 will avoid destruction, net loss, or adverse impacts to wetlands to the extent possible.
<ul style="list-style-type: none"> California Endangered Species Act (CESA) 	Cal. Fish & Game Code §§ 2053–2054, 2081, 2080.1, 2081.1; 14 CCR §§ 670.2, 670.5, 783.1-783.6; Cal. Fish & Game Code § 2014.	The California ESA provides authority similar to the federal ESA for the protection of threatened and endangered species listed by the State. Six California endangered plant species have been identified at the Presidio: San Francisco spineflower, Franciscan thistle, dune gilia, San Francisco gum plant, San Francisco campion, and San Francisco owl's clover. One California endangered bird species, the willow flycatcher, has been identified at the Presidio.	Applicable	The locations of California endangered plant species are to be protected during implementation of BBDA 3 and 4 remedial actions. Protections may include fencing areas and other appropriate precautions. The Trust will also implement erosion control measures, as needed, to ensure that remedial actions do not jeopardize critical habitat.

Table 2
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Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• California Native Plant Protection Act	Cal. Fish & Game Code § 1908; 14 CCR §§ 783.1–783.6	The California Native Plant Protection Act prohibits the taking of endangered or rare native plants, unless authorized by an incidental take permit. The Presidio has a number of endangered or rare plants specified under the California Native Plant Protection Act.	Applicable	The locations of California native plant species that are to be protected will be fenced off during remediation activities at BBDAs 3 and 4 in order to preserve them. The Trust will also implement erosion control measures to ensure that critical habitat is not jeopardized.
• Cal. Fish & Game Code regarding protection of birds, mammals, reptiles, or amphibia	Cal. Fish & Game Code §§ 3503, 3503.5, 3511, 3513; 14 CCR § 747	The California Fish & Game Code prohibits taking, possessing, or destroying certain birds, their nests, and their eggs. Migratory and other birds have been observed at the Presidio. Remedial actions that include removal of trees that may provide nests for migratory birds may require additional review.	Applicable	Tree removal will not occur during the nesting season. If any of the protected birds, mammals, reptiles, or amphibia are encountered during implementation of the BBDAs 3 or 4 remedial actions, the Trust will ensure their protection consistent with the pertinent provisions of the Cal. Fish & Game Code.
Action-Specific ARARs and TBCs				
Federal ARARs and TBCs: None				
State ARARs and TBCs				
• Basin Plan-- Chapter 4.; Effluent Limitations	Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan, pages 4-8 to 4-11	Limitations to construction-related stormwater discharges are described in this provision.	Applicable	Remediation efforts at BBDAs 3 and 4 will not likely include stormwater discharge. However, any remediation-related stormwater discharges will use controls to reduce pollutant loads in stormwater in a manner that will not adversely impact groundwater or surface water, in accordance with the Basin Plan.
Discharge of Treated Groundwater Table 4-1: Discharge Prohibitions	Porter-Cologne Water Quality Control Act promulgated under California Water Code § 13240-13241, Basin Plan, pp. 4-17 to 4-18; Table 4-1	Table 4-1 more broadly describes discharge prohibitions (e.g., with respect to toxic substances, solid wastes, silt, sediments, oil, and petroleum by-products). Page 4-17 of the Basin Plan refers to State Water Quality Control Board (SWRCB) Resolution No. 88-160, Disposal of Extracted Groundwater	Applicable	Remediation efforts at BBDAs 3 and 4 do not include groundwater extraction or the need for disposal of treated groundwater. If groundwater discharge of remediation dewatering falls within the scope of these regulations, the discharge will be in accordance with the Basin Plan. However, construction dewatering will likely be discharged to a publicly owned treatment works (POTW) and will

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ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Stormwater Discharges	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan pp. 4-14 to 4-15	<p>from Cleanup Projects, which urges dischargers of groundwater extracted from site clean-up projects to reclaim their effluent. It states that when reclamation is not feasible, discharges must be piped to a municipal treatment plant or discharged under a National Pollutant Discharge Elimination System (NPDES) permit authorizing the discharge from these sites.</p> <p>The Stormwater Discharges program is regulated by the Regional Board for certain municipal, industrial, and construction stormwater discharges through NPDES permits. NPDES permits include requirements to prevent or reduce discharges of pollutants that cause or contribute to violations of water quality objectives.</p>	Applicable	<p>meet the requirements of the City and County of San Francisco Sanitary Sewer Discharge Order (see below).</p> <p>In accordance with the Basin Plan, any construction stormwater discharges will use controls to reduce pollutant loads in stormwater in order to prevent violations of water quality objectives.</p>
Surface Water Protection	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan pp. 4-28, 4-32, 4-40 to 4-41	<p>Surface Water Protection and Management through nonpoint source control is regulated by the RWQCB. The Construction Activity Control Program requires an NPDES permit for construction activities involving disturbance of one acres or greater total land area. Permit conditions address pollutant and waste discharges occurring during construction activities and the discharge of pollutants in runoff after construction. The Erosion and Sediment Control program establishes guidelines for the regulation of erosion and sedimentation for the protection of beneficial uses of water due to the impairment by sediment.</p>	Applicable	<p>Erosion control measures in accordance with the Basin Plan are part of the planned remediation actions to be implemented at BBDA 3 and 4.</p>

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ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Cleanup of Polluted Sites	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13240-13241, Basin Plan, pp. 4-17 to 4-18; Table 4-1, pp. 4-58 to 4-59 and 4-62 to 4-63.	pp. 4-58 to 4-59 discuss the Regional Board's strategies for setting groundwater and soil cleanup levels.	Applicable	Cleanup levels for BBDA 3 and 4 are those derived in the Presidio-wide Cleanup Level Document, as updated, which incorporate values from the Basin Plan and RWQCB orders. Verification soil sampling at excavations and groundwater sampling at BBDA 3 will be performed to ensure that cleanup levels are met. The cleanup levels for BBDA 3 and 4 are presented in Tables 4 and 5, respectively.
• State Water Resources Control Board (SWRCB) Resolution No. 92-49	Porter-Cologne Water Quality Control Act promulgated under California Water Code, § 13140	Resolution 92-49 establishes policies and procedures for investigating and remediating chemical releases that affect or threaten water quality.	Relevant and appropriate	The Trust will follow the requirements of Resolution 92-49 in the preparation of planning documents and the implementation of remedial actions for BBDA 3.
• Hazardous Waste Requirements-- Generation, Transport, and Disposal Regulations	State of California citation: Cal. Health & Safety Code §§ 25100–25249, 25250–25250.26, 25260–25929; 22 CCR §§ 66260.1–68500.35. Federal citation: 42 USC §§ 6901–6991i; 40 CFR Parts 260–282. §§ 25100–25166.5, 25179.1–12 (land disposal restrictions [LDRs]), 25244–25244.24 (waste reduction and recycling); 22 CCR §§ 66260.10–66262.41, 66264.1–172, 66265.16–199; 66268.10–44, .105–113 (LDRs + treatment standards); 49 CFR Parts 172, 173, 178, 179 (transportation) [incorporated by reference]	Pursuant to 42 USC § 7926, the State of California is authorized to implement the federal Resource Conservation and Recovery Act (RCRA) Program. Federal statutes may apply to areas not covered by the state program, or where incorporated by reference. Remedial actions at BBDA 3 and BBDA 4 may include off-site transportation and disposal of hazardous wastes.	Applicable	All hazardous wastes generated in the excavation of BBDA 3 and 4 will be stored, handled, and transported in accordance with the pertinent provisions of these requirements. The Trust will also comply with requirements for proper recordkeeping.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Medical Waste Handling requirements	Cal. Health and Safety Code 117600-118360; SF Municipal Health Code §§ 1501-1514	Medical waste is required to undergo certain treatment requirements prior to disposal so that it can be characterized as a “solid” waste. Without such treatment, land disposal of medical waste is not permitted.	Relevant and appropriate	If medical waste is encountered, it will be managed in compliance with the Act. Based on existing site data, medical waste is not expected to be encountered during excavation at these sites.
• Solid (Non-Hazardous) Waste Requirements	Cal.Pub. Res. Code §40000-40201, 43000-44820; 27 CCR §§ 20005-20278	These requirements govern off-site disposal of nonhazardous solid waste and closure and postclosure of solid waste management units.	Relevant and appropriate	The transport and disposal of nonhazardous waste generated from the remediation of BBDA 3 and BBDA 4 will be performed in accordance with the pertinent sections of Title 27.
Clean Closure Requirements	27 CCR § 20380(d)(2); 27 CCR § 21090(f); CCR § 21410	For clean closure, all waste, waste residues, contaminated containment systems components, contaminated subsoils, and all other contaminated materials are removed or decontaminated at closure pursuant to the specific requirements for landfills, etc. Clean closure renders the landfill no longer a threat to water quality.	Relevant and appropriate	The remedial actions for BBDA 3 and 4 consist of a clean closure which include the removal of all contaminated soil and debris until cleanup levels in Tables 4 and 5, respectively, are achieved.
Inert Waste Requirements	27 CCR § 20230	Inert waste is a subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste. Inert wastes do not need to be discharged at classified units.	Relevant and appropriate	Some materials encountered at BBDA 3 or 4 may meet the definition of inert. If so, such materials can be handled as inert waste and need not be disposed of at a classified disposal unit.
• Federal Clean Air Act, certain Bay Area Air Quality Management District (BAAQMD) Regulations	BAAQMD Regulations (see citations below)	Implementation of federal Clean Air Act requirements has been delegated, in part, to the State of California. The BAAQMD is the local implementing agency. Where BAAQMD requirements have been incorporated into the State Implementation Plan and	Relevant and appropriate	Remedial actions at BBDA 3 and 4 will be conducted in accordance with the substantive requirements of the cited BAAQMD regulations.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
Air Requirements	BAAQMD Regulation 6	approved by EPA, they are federally-enforceable. Where BAAQMD requirements have not been incorporated into the SIP and approved by EPA, they are not federally enforceable.	Relevant and appropriate	Dust suppression measures will be implemented during the performance of the remedial action at BBDA 3 and BBDA 4 in compliance with the pertinent provisions of these rules.
Air Requirements	Air Resources Board Executive Order G-02-026, Resolution 0128, modification to Section 93105 of Title 17 of the CCR, Asbestos Air-borne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations	Regulation 6 limits emissions of particulates. Excavation activities at BBDA 3 and BBDA 4 may result in particulate emissions. Regulation 6 is not SIP-approved and is not a federally enforceable requirement. The Model Rule addresses potential asbestos releases that may occur during construction, grading, quarrying, and surface mining on areas that contain naturally occurring asbestos. Excavation in serpentine rock may result in the emission of naturally occurring asbestos. Such activities in areas larger than 1 acre will require a dust mitigation plan.	To be Considered	If remediation will result in disturbance of serpentine rock, the dust control measures included in the proposed regulation will be implemented. For BBDA 3, which exceeds 1 acre and where serpentine rock may be present, a dust mitigation plan will be prepared and on-site dust mitigation and monitoring for asbestos will be conducted in compliance with the substantive provisions of this Model Rule.
Air Requirements	BAAQMD Regulation 7; Regulation 8, Rule 40; and Regulation 9, Rule 2.	These requirements regulate the emission of odorous substances, organic compounds, and hydrogen sulfide.	Relevant and appropriate	A site-specific Health and Safety Plan will be prepared and will address potential emission of odorous substances, organic compounds, and hydrogen sulfide.
Air Requirements	BAAQMD Regulation 8, Rule 15	BAAQMD Regulation 8, Rule 15 prohibits the use of certain types of liquid and emulsified asphalts (those that would emit large amounts of organic compounds). This rule was approved into the SIP on 22 March 1995, as amended by BAAQMD on 1 June 1994.	Relevant and appropriate	The Trust will comply with this regulation if asphalt paving is used to repair road surfaces after excavation of BBDA 3 and BBDA 4.

Table 2
Applicable Relevant and Appropriate Requirements (ARARs)
Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

ARAR	Citation	Description	ARAR Determination	Action to be taken in Conjunction with Recommended Alternative ^a
• California prohibitions on polluting waters of the State	Cal. Fish & Game Code § 5650	Cal. Fish & Game Code § 5650(a) prohibits depositing enumerated substances, including “any substance or material deleterious to fish, plant life, or bird life” into the waters of the state.	Relevant and appropriate	The Trust will implement erosion control measures to contain runoff from the sites so that site soil is not transported to waters of the state in accordance with this requirement.
• California restrictions on means of taking birds or mammals	Cal. Fish & Game Code § 3005	Section 3005 of the Cal. Fish & Game Code prohibits taking birds or mammals with “any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken,” except as provided in the Fish & Game Code.	Relevant and appropriate	If a remedial action at BBDA 3 or 4 involves the “take” of any bird or mammal (although considered an unlikely event), the Trust will comply with the substantive requirements of this section.
• City and County of San Francisco Sanitary Sewer Discharge Order	San Francisco Municipal Code: Public Works Code, Article 4.1, Industrial Waste, §§ 119, 123(a)–(c), 123(h), 123(i), 124–127	The City of San Francisco order is an industrial pretreatment permit which implements the State Water Code. Discharge to the sewer of groundwater from dewatering must meet these requirements.	To be Considered	The Presidio Trust’s order from the City of San Francisco applies to discharges of wastewater to the sanitary sewer. This may include groundwater from dewatering or decontamination activities, if necessary, during remediation of BBDA 3 and 4.

Notes

a The recommended action for BBDA 3, Alternative 4, consists of the following components: (a) excavating contaminated debris and soil fill within the area of BBDA 3 as shown generally in Figure 16; (b) segregation of uncontaminated soil and inert construction debris for recycling, as practicable; (c) soil confirmation sampling for soil COCs to ensure soil cleanup levels have been achieved; (d) off-site disposal of contaminated debris and soils at a permitted waste management facility; and, (e) three years of post-clean closure groundwater monitoring.

The recommended action for BBDA 4, Alternative 2, consists of the following components: (a) excavating contaminated soil “hot spot” within the area of BBDA 4 as shown generally in Figure 13; (b) soil confirmation sampling for soil COCs (metals and pesticides) to ensure soil cleanup levels have been achieved; and (c) off-site disposal of contaminated debris and soils and an approved waste management facility.

Table 3
Soil and Groundwater Cleanup Levels
Fill Site 6A
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater Cleanup Level (mg/L)
			Residential - Colma Ecological - Special Status ¹			Drinking Water Surface Water ²
Inorganic Chemicals (Method 6020)						
Antimony	0.2	3	5	2.0	2.0	6
Arsenic	0.2	0.25	6.2	2.0	2.0	10
Barium	0.1	1	320	1.0	1.0	1,000
Beryllium	0.1	0.1	10	1.0	1.0	4
Cadmium	0.1	0.25	0.8	1.0	1.0	1.1
Chloride	--	--	--	--	--	250,000
Chromium (Cr(VI) & Cr(III))	0.2	0.5	140	2.0	2.0	50
Cobalt	0.1	1	21	1.0	1.0	--
Copper	0.2	0.5	49	2.0	2.0	11.8
Lead	0.1	0.15	160	1.0	1.0	3.2
Tetraethyl Lead	--		0.0052	--	--	--
Mercury	--	0.1	0.4	--	--	0.012
Molybdenum	0.1	1	12	1.0	1.0	--
Nickel	0.2	1	110	2.0	2.0	100
Selenium	0.2	0.25	0.5	2.0	2.0	5
Silver	0.1	0.25	2	1.0	1.0	4.1
Thallium	0.1	0.25	1	1.0	1.0	1.7
Vanadium	1.0	0.5	90	10	10	--
Zinc	0.2	1	60	2.0	2.0	106
Semivolatile Organic Compounds (Method 8270C)						
Acenaphthene	0.33	0.05	30	10	5	1,200
Acenaphthylene	0.33	0.05	30	10	10	--
Anthracene	0.33	0.05	30	10	0.5	770
Benzo(a)anthracene	0.33	0.05	0.27	10	0.1	0.0044
Benzo(a)pyrene	0.33	0.05	0.027	10	0.1	0.0044
Benzo(b)fluoranthene	0.33	0.05	0.27	10	0.2	0.0044
Benzo(g,h,i)perylene	0.33	0.05	30	10	0.2	150
Benzo(k)fluoranthene	0.33	0.05	0.27	10	0.1	0.0044
Benzyl Alcohol	0.33	0.33	1	10	10	--

Table 3
Soil and Groundwater Cleanup Levels
Fill Site 6A
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater Cleanup Level (mg/L)
			Residential - Colma Ecological - Special Status ¹			Drinking Water Surface Water ²
Semivolatile Organic Compounds (cont.)						
Bis(2-ethylhexyl)phthalate	--	--	54	10	10	1.8
Chrysene	0.33	0.05	2.7	10	0.1	0.0044
Dibenzo(a,h)anthracene	0.33	0.05	0.078	10	0.2	0.0044
Dibenzofuran	0.33	0.33	910	10	10	--
Fluoranthene	0.33	0.05	30	10	0.4	300
Fluorene	0.33	0.05	30	10	1.0	300
Indeno(1,2,3-c,d)pyrene	0.33	0.05	0.27	10	0.14	0.0044
2-methylnaphthalene	0.33	0.33	30	10	10	--
2-methylphenol (o-Cresol)	--	--	--	--	10	--
4-methylphenol (p-Cresol)	0.33	0.33	50	--	10	--
Naphthalene	0.33	0.05	40 (9) ³	10	5	300
n-dotriacontane	--	--	--	--	--	--
n-hentriacontane	--	--	--	--	--	--
n-nitrosodiphenylamine	0.33	0.33	20	10	10	5
n-triacontane	--	--	--	--	--	--
Pentachlorophenol	1.6	1.7	3	50	10	0.03
Phenanthrene	0.33	0.05	30	10	0.5	230
Phenol	0.33	0.33	30	10	10	1
Total Carcinogenic Polycyclic Aromatic Hydrocarbons	--	--	-- (111) ³	--	--	0.031
Pyrene	0.33	0.05	30	10	0.2	230
Volatile Organic Compounds (Method 8260B)						
Acetone	0.01	0.02	0.24	10	10	--
Bromodichloromethane	--	--	--	0.5	0.5	0.56
2-butanone (MEK)	0.01	0.01	3.8	10	10	--
Carbon disulfide	0.005	0.005	200	5.0	0.5	--
Carbon Tetrachloride	--	--	--	0.5	0.5	0.25
Chlorodibromomethane	--	--	--	0.5	0.5	0.40
Chlorobenzene	--	--	--	0.5	0.5	70
Chloroform	--	--	--	0.5	0.5	80
Chloromethane	--	--	--	0.5	1.0	--
1,4-dichlorobenzene	--	0.005	0.13	2.4	0.5	5
1,2-dichloroethane	--	--	--	0.5	0.5	0.38

Table 3
Soil and Groundwater Cleanup Levels
Fill Site 6A
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater Cleanup Level (mg/L)
			Residential - Colma			Drinking Water Surface Water ²
			Ecological - Special Status ¹			
Volatile Organic Compounds (cont.)						
1,1-dichloroethane	--		--	--	--	0.057
cis 1,2-dichloroethane	--		--	--	--	6
p-Isopropyltoluene (p-cymene)	--		130	--	--	--
Methylene Chloride	0.005	0.02	0.076	4.5	5	4.7
Tetrachloroethene	--	--	--	0.5	0.5	0.8
1,2,3-trichloroethane	--	--	--	--	--	7
1,2,4-trichloroethane	--	--	--	--	--	7
1,1,1-trichloroethane	0.01	0.005	8.0	0.5	0.5	200
Trichloroethene	0.01	0.05	--	0.5	0.5	2.7
Trichlorofluoromethane	--	0.005	40	--	0.5	150
MTBE	--	--	--	2	0.5	13
PCBs, Pesticides, and Herbicides (Methods 8081, 8082 & 8150)						
PCBs (Aroclor 1254)	0.033	0.012	0.033	--	0.5	0.00017
Aldrin	0.002	0.002	0.0039	0.05	0.025	0.00013
alpha-BHC	0.002	0.002	0.062	--	--	--
beta-BHC	0.002	0.002	0.062	--	--	0.014
delta-BHC	0.002	0.002	0.062	--	--	--
Chlordane	0.002	0.002	0.0090	0.5	0.25	0.00057
2,4-D	0.025	--	0.025	0.25	1.0	70
4,4'-DDD	0.004	0.002	0.049	0.1	0.05	0.00083
4,4'-DDE	0.004	0.002	0.098	0.1	0.05	0.00059
4,4'-DDT	0.004	0.002	0.0082	0.1	0.05	0.00059
Dicamba	0.01	--	0.01	0.25	1.0	--
Dieldrin	0.004	0.002	0.030	0.1	0.05	0.00014
Endosulfan	0.002	0.002	1.1	0.05	0.025	110
Endosulfan Sulfate	0.004	0.002	1.1	0.1	0.05	110
Endrin	0.004	0.002	0.004	0.1	0.05	0.76
Endrin Aldehyde	--	0.002	0.004	--	0.05	0.76
Endrin Ketone	0.004	0.002	0.004	0.1	0.05	0.76
gamma-BHC (Lindane)	0.002	0.002	0.010	0.05	0.025	0.019
Heptachlor	0.002	0.002	0.017	0.05	0.025	0.00021
Heptachlor Epoxide	0.002	0.002	0.017	0.05	0.025	0.00021
Isodrin	--	--	0.0039	--	0.05	--
MCPP	5.0	--	5.0	100	500	--
Methoxychlor	0.02	0.02	0.44	0.5	0.25	40

Table 3
Soil and Groundwater Cleanup Levels
Fill Site 6A
Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater Cleanup Level (mg/L)
			Residential - Colma Ecological - Special Status ¹			Drinking Water Surface Water ²
Petroleum Hydrocarbons (Method 8015 Modified)						
TPH as gasoline (C7 - C12)	1.0	1	140 (100) ³	50	50	443
TPH as diesel (C12-C24)	10	1	144 (115) ³	50	50	880
TPH as fuel oil (C24-C36)	10	5	144	300	300	1,200
BTEX Compounds (Method 8260B)						
Benzene	0.005	0.005	0.6 (0.005) ³	0.01	0.5	1
Ethylbenzene	0.005	0.005	15 (13) ³	0.05	0.5	700
Toluene	0.010	0.005	3 (1) ³	0.5	0.5	150
Total Xylenes	0.005	0.005	5.7	0.5	0.5	318

Notes

Shading indicates applicable cleanup levels.

¹Cleanup levels for soil in the Ecological Special Status Species Zone are based on the most stringent of the values for protection of human health (residential land use), protection of ecological receptors (ecological special status species), protection of ecological receptors (freshwater aquatic organisms), and maintaining drinking water standards in groundwater (soil less than or greater than 5 feet above groundwater, as applicable). In the case of metals, if the background metals concentration for Colma lithology is greater than the most stringent cleanup level, then the background concentration applies as the cleanup level. Source: Table 7-2 (non-petroleum compounds) and Table 7-5 (petroleum hydrocarbons and constituents) in Cleanup Levels Document (EKI, 2002).

²Cleanup levels for groundwater are based on the most stringent of the values for maintaining water quality criteria for drinking water and surface water. Source: Table 7-6 in Cleanup Levels Document (EKI, 2002).

³Values shown in parentheses applies if depth to groundwater at sampling location is less than 5 feet.

Table 4
Soil and Groundwater Cleanup Levels
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater and Surface Water Seep Cleanup Level (mg/L)
			Recreational - Serpentine Ecological - Special Status	Recreational - Colma Ecological - Special Status	Recreational - Beach/Dune Ecological - Special Status	Residential - Serpentinite Ecological - Special Status ¹	Residential - Colma Ecological - Special Status ¹	Residential - Beach/Dune Ecological - Special Status ¹	Drinking Water Freshwater Seep ²	
Inorganic Chemicals (Method 6020)										
Antimony	0.2	3	5.0	5.0	5.0	5.0	5.0	2.0	1.0	6
Arsenic	0.2	0.25	5.4	6.2	5.9	5.4	6.2	2.0	1.0	10
Barium	0.1	1	320	320	320	320	320	1.0	1	1,000
Beryllium	0.1	0.1	10	10	10	10	10	1.0	1.0	4
Cadmium	0.1	0.25	1.9	0.8	1.7	1.9	1.7	1.0	1.0	1.1
Chloride	--	--	--	--	--	--	--	--	100	250000
Chromium (Cr(VI) & Cr(III))	0.2	0.5	1,700	140	120	1,700	140	120	2.0	1.0
Cobalt	0.1	1	170	21	20	170	21	20	1.0	1.0
Copper	0.2	0.5	85	49	43	85	49	43	2.0	1.0
Lead	0.1	0.15	160	160	160	160	160	1.0	3	3.2
Tetraethyl Lead	--	--	0.013	0.013	0.013	0.0052	0.0052	0.0052	--	--
Molybdenum	0.1	1	12	12	12	12	12	1.0	20	--
Nickel	0.2	1	4,500	110	70	4,500	110	70	2.0	1.0
Selenium	0.2	0.25	0.5	0.5	0.75	0.5	0.5	2.0	5	5
Silver	0.1	0.25	2.0	2.0	2.0	2.0	2.0	1.0	1.0	4.1
Thallium	0.1	0.25	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2
Vanadium	1.0	0.5	74	90	92	74	90	92	10	10
Zinc	0.2	1	160	60	66	160	60	66	2.0	1.0
Semivolatile Organic Compounds (Method 8270C)										
Acenaphthene	0.33	0.05	30	30	30	30	30	10	5	--
Acenaphthylene	0.33	0.05	30	30	30	30	30	10	10	--
Anthracene	0.33	0.05	30	30	30	30	30	10	0.5	770
Benzo(a)anthracene	0.33	0.05	0.65	0.65	0.65	0.27	0.27	0.27	0.1	0.1
Benzo(a)pyrene	0.33	0.05	0.065	0.065	0.065	0.027	0.027	0.027	0.1	0.2
Benzo(b)fluoranthene	0.33	0.05	0.65	0.65	0.65	0.27	0.27	0.27	0.2	0.2
Benzo(g,h,i)perylene	0.33	0.05	30	30	30	30	30	10	0.2	150
Benzo(k)fluoranthene	0.33	0.05	0.65	0.65	0.65	0.27	0.27	0.27	0.1	2
Benzyl Alcohol	0.33	0.33	1.0	1.0	1.0	1.0	1.0	10	10	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	10	10	4
Chrysene	0.33	0.05	6.5	6.5	6.5	2.7	2.7	10	0.1	20
Dibenzo(a,h)anthracene	0.33	0.05	0.19	0.19	0.19	0.078	0.078	0.078	0.2	--
Dibenzofuran	0.33	0.33	2,200	2,200	2,200	910	910	910	10	--
Fluoranthene	0.33	0.05	30	30	30	30	30	10	0.4	300
Fluorene	0.33	0.05	30	30	30	30	30	10	1.0	300
Indeno(1,2,3-c,d)pyrene	0.33	0.05	0.65	0.65	0.65	0.27	0.27	10	0.14	--
2-methylnaphthalene	0.33	0.33	30	30	30	30	30	10	10	--
2-methylphenol (o-Cresol)	--	--	--	--	--	--	--	10	10	--
4-methylphenol (p-Cresol)	0.33	0.33	50	50	50	50	50	--	10	--
Naphthalene	0.33	0.05	30	30	30	30	30	10	5	300
n-dotriaccontane	--	--	--	--	--	--	--	--	--	--
n-hentriacontane	--	--	--	--	--	--	--	--	--	--
n-nitrosodiphenylamine	0.33	0.33	20	20	20	20	20	10	10	--
n-triacontane	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	1.6	1.7	3.0	3.0	3.0	3.0	3.0	50	10	1
Phenanthrene	0.33	0.05	30	30	30	30	30	10	0.5	230
Phenol	0.33	0.33	30	30	30	30	30	10	10	1
Polycyclic Aromatic Hydrocarbons	--	--	--	--	--	--	--	--	--	--
Pyrene	0.33	0.05	30	30	30	30	30	10	0.2	230

Table 4
Soil and Groundwater Cleanup Levels
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater and Surface Water Seep Cleanup Level (mg/L)
			Recreational - Serpentine Ecological - Special Status	Recreational - Colma Ecological - Special Status	Recreational - Beach/Dune Ecological - Special Status	Residential - Serpentine Ecological - Special Status ¹	Residential - Colma Ecological - Special Status ¹	Residential - Beach/Dune Ecological - Special Status ¹	Drinking Water Freshwater Seep ²	
Volatile Organic Compounds (Method 8260B)										
Acetone	0.01	0.02	0.24	0.24	0.24	0.24	0.24	0.24	10	10
Bromodichloromethane	--	--	--	--	--	--	--	--	0.5	0.5
2-butanol (MEK)	0.01	0.01	3.8	3.8	3.8	3.8	3.8	3.8	10	10
Carbon disulfide	0.005	0.005	200	200	200	200	200	200	5.0	0.5
Carbon Tetrachloride	--	--	--	--	--	--	--	--	0.5	0.5
Chlorodibromomethane	--	--	--	--	--	--	--	--	0.5	0.5
Chlorobenzene	--	--	--	--	--	--	--	--	0.5	0.5
Chloroform	--	--	--	--	--	--	--	--	0.5	0.5
Chloromethane	--	--	--	--	--	--	--	--	0.5	1.0
1,4-dichlorobenzene	--	0.005	0.59	0.59	0.59	0.13	0.13	0.13	2.4	0.5
1,2-dichloroethane	--	--	--	--	--	--	--	--	0.5	0.5
1,1-dichloroethane	--	--	--	--	--	--	--	--	--	6
cis 1,2-dichloroethane	--	--	--	--	--	--	--	--	--	6
p-Isopropyltoluene (p-cymene)	--	--	130	130	130	130	130	130	--	--
Methylene Chloride	0.005	0.02	0.076	0.076	0.076	0.076	0.076	0.076	4.5	5
Tetrachloroethene	--	--	--	--	--	--	--	--	0.5	0.5
1,2,3-trichloroethane	--	--	--	--	--	--	--	--	--	7
1,2,4-trichloroethane	--	--	--	--	--	--	--	--	--	7
1,1,1-trichloroethane	0.01	0.005	8.0	8.0	8.0	8.0	8.0	8.0	0.5	200
Trichloroethene	0.01	0.05	--	--	--	--	--	--	0.5	5
Trichlorofluoromethane	--	0.005	80	80	80	40	40	40	--	150
PCBs, Pesticides, and Herbicides (Methods 8081, 8082 & 8150)										
PCBs (Aroclor 1254)	0.033	0.012	0.033	0.033	0.033	0.033	0.033	0.033	--	0.5
Aldrin	0.002	0.002	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	0.05	0.025
alpha-BHC	0.002	0.002	0.062	0.062	0.062	0.062	0.062	0.062	--	--
beta-BHC	0.002	0.002	0.062	0.062	0.062	0.062	0.062	0.062	--	0.3
delta-BHC	0.002	0.002	0.062	0.062	0.062	0.062	0.062	0.062	--	--
Chlordane	0.002	0.002	0.0090	0.0090	0.0090	0.0090	0.0090	0.0090	0.5	0.25
2,4-D	0.025	--	0.025	0.025	0.025	0.025	0.025	0.025	0.25	1.0
4,4'-DDD	0.004	0.002	0.049	0.049	0.049	0.049	0.049	0.049	0.1	0.05
4,4'-DDE	0.004	0.002	0.098	0.098	0.098	0.098	0.098	0.098	0.1	0.05
4,4'-DDT	0.004	0.002	0.0082	0.0082	0.0082	0.0082	0.0082	0.0082	0.1	0.001
Dicamba	0.01	--	0.01	0.01	0.01	0.01	0.01	0.01	0.25	--
Dieldrin	0.004	0.002	0.039	0.039	0.039	0.030	0.030	0.030	0.1	0.056
Endosulfan	0.002	0.002	1.1	1.1	1.1	1.1	1.1	1.1	0.05	0.025
Endosulfan Sulfate	0.004	0.002	1.1	1.1	1.1	1.1	1.1	1.1	0.1	0.056
Endrin	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004	0.1	0.036
Endrin Aldehyde	--	0.002	0.004	0.004	0.004	0.004	0.004	0.004	--	0.036
Endrin Ketone	0.004	0.002	0.004	0.004	0.004	0.004	0.004	0.004	0.1	0.036
gamma-BHC (Lindane)	0.002	0.002	0.010	0.010	0.010	0.010	0.010	0.010	0.05	0.2
Heptachlor	0.002	0.002	0.017	0.017	0.017	0.017	0.017	0.017	0.05	0.025
Heptachlor Epoxide	0.002	0.002	0.017	0.017	0.017	0.017	0.017	0.017	0.05	0.0038
Isodrin	--	--	0.0039	0.0039	0.0039	0.0039	0.0039	0.0039	--	0.05
MCPP	5.0	--	5.0	5.0	5.0	5.0	5.0	5.0	100	500
Methoxychlor	0.02	0.02	0.44	0.44	0.44	0.44	0.44	0.44	0.5	40

Table 4
Soil and Groundwater Cleanup Levels
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit Soil (mg/kg)	Laboratory Detection Limit Soil (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)	QAPP Analytical Reporting Limit Water (mg/L)	Laboratory Detection Limit Water (mg/L)	Groundwater and Surface Water Seep Cleanup Level (mg/L)
			Recreational - Serpentine Ecological - Special Status	Recreational - Colma Ecological - Special Status	Recreational - Beach/Dune Ecological - Special Status	Residential - Serpentine Ecological - Special Status ¹	Residential - Colma Ecological - Special Status ¹	Residential - Beach/Dune Ecological - Special Status ¹	Drinking Water Freshwater Seep ²	
Petroleum Hydrocarbons (Method 8015 Modified)										
TPH as gasoline (C7 - C12)	1.0	1	610	610	610	610	610	610	50	50
TPH as diesel (C12-C24)	10	1	700	700	700	700	700	700	50	50
TPH as fuel oil (C24-C36)	10	5	980	980	980	980	980	980	300	300
BTEX Compounds (Method 8260B)										
Method 8260B										
Benzene	0.005	0.005	1.5	1.5	1.5	0.6	0.6	0.6	0.01	0.5
Ethylbenzene	0.005	0.005	60	60	60	60	60	60	0.05	0.5
Toluene	0.010	0.005	270	270	270	270	270	270	0.5	0.5
Total Xylenes	0.005	0.005	55	55	55	55	55	55	0.5	0.5

Notes

Shading indicates target cleanup levels.

¹ Cleanup levels for soil are based on the most stringent of the values for protection of human health (recreational or residential land use), protection of ecological receptors (ecological special status species), protection of ecological receptors (terrestrial receptors), and maintaining drinking water standards in groundwater (soils greater than 5 feet above groundwater). In the case of metals, if the background concentration for a particular lithology (Serpentine, Colma, or Beach/Dune Sand, as noted) is greater than the most stringent cleanup level, then the background concentration applies as the cleanup level. Source: Table 7-2 (non-petroleum compounds) and Table 7-5 (petroleum hydrocarbons and constituents) in Cleanup Levels Document (EKI, 2002).

² Cleanup levels for groundwater and surface water seeps are based on the most stringent of the values for maintaining water quality criteria for drinking water and freshwater seeps. Source: Table 7-6 in Cleanup Levels Document (EKI, 2002).

Table 5
Soil Cleanup Levels
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit (mg/kg)	Laboratory Detection Limit (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)
			Recreational - Beach/Dune Ecological - Special Status	Residential - Beach/Dune Ecological - Special Status ¹
Inorganic Chemicals (Method 6020)				
Antimony	0.2	3	5.0	5.0
Arsenic	0.2	0.25	5.9	5.9
Barium	0.1	1	320	320
Beryllium	0.1	0.1	10	10
Cadmium	0.1	0.25	1.7	1.7
Chloride	--	--	--	--
Chromium (Cr(VI) & Cr(III))	0.2	0.5	120	120
Cobalt	0.1	1	20	20
Copper	0.2	0.5	43	43
Lead	0.1	0.15	160	160
Tetraethyl Lead	--	--	0.013	0.0052
Molybdenum	0.1	1	12	12
Nickel	0.2	1	70	70
Selenium	0.2	0.25	0.75	0.75
Silver	0.1	0.25	2.0	2.0
Thallium	0.1	0.25	1.0	1.0
Vanadium	1.0	0.5	92	92
Zinc	0.2	1	66	66
Semivolatile Organic Compounds (Method 8270C)				
Acenaphthene	0.33	0.05	30	30
Acenaphthylene	0.33	0.05	30	30
Anthracene	0.33	0.05	30	30
Benzo(a)anthracene	0.33	0.05	0.65	0.27
Benzo(a)pyrene	0.33	0.05	0.065	0.027
Benzo(b)fluoranthene	0.33	0.05	0.65	0.27
Benzo(g,h,i)perylene	0.33	0.05	30	30

Table 5
Soil Cleanup Levels
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit (mg/kg)	Laboratory Detection Limit (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)
			Recreational - Beach/Dune Ecological - Special Status	Residential - Beach/Dune Ecological - Special Status ¹
Semivolatile Organic Compounds (cont.)				
Benzo(k)fluoranthene	0.33	0.05	0.65	0.27
Benzyl Alcohol	0.33	0.33	1.0	1.0
Bis(2-ethylhexyl)phthalate	--	--	--	--
Chrysene	0.33	0.05	6.5	2.7
Dibenzo(a,h)anthracene	0.33	0.05	0.19	0.078
Dibenzofuran	0.33	0.33	2,200	910
Fluoranthene	0.33	0.05	30	30
Fluorene	0.33	0.05	30	30
Indeno(1,2,3-c,d)pyrene	0.33	0.05	0.65	0.27
2-methylnaphthalene	0.33	0.33	30	30
2-methylphenol (o-Cresol)	--	--	--	--
4-methylphenol (p-Cresol)	0.33	0.33	50	50
Naphthalene	0.33	0.05	30	30
n-dotriacontane	--	--	--	--
n-hentriacontane	--	--	--	--
n-nitrosodiphenylamine	0.33	0.33	20	20
n-triacontane	--	--	--	--
Pentachlorophenol	1.6	1.7	3.0	3.0
Phenanthrene	0.33	0.05	30	30
Phenol	0.33	0.33	30	30
Polycyclic Aromatic Hydrocarbons	--	--	--	--
Pyrene	0.33	0.05	30	30
Volatile Organic Compounds (Method 8260B)				
Acetone	0.01	0.02	0.24	0.24
Bromodichloromethane	--	--	--	--
2-butanone (MEK)	0.01	0.01	3.8	3.8
Carbon disulfide	0.005	0.005	200	200
Carbon Tetrachloride	--	--	--	--
Chlorodibromomethane	--	--	--	--

Table 5
Soil Cleanup Levels
Baker Beach Disturbed Area 4
Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit (mg/kg)	Laboratory Detection Limit (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)
			Recreational - Beach/Dune Ecological - Special Status	Residential - Beach/Dune Ecological - Special Status ¹
Volatile Organic Compounds (cont.)				
Chlorobenzene	--	--	--	--
Chloroform	--	--	--	--
Chloromethane	--	--	--	--
1,4-dichlorobenzene	--	0.005	0.59	0.13
1,2-dichloroethane	--	--	--	--
1,1-dichloroethane	--	--	--	--
cis 1,2-dichloroethane	--	--	--	--
p-Isopropyltoluene (p-cymene)	--	--	130	130
Methylene Chloride	0.005	0.02	0.076	0.076
Tetrachloroethene	--	--	--	--
1,2,3-trichloroethane	--	--	--	--
1,2,4-trichloroethane	--	--	--	--
1,1,1-trichloroethane	0.01	0.005	8.0	8.0
Trichloroethene	0.01	0.05	--	--
Trichlorofluoromethane	--	0.005	80	40
PCBs, Pesticides, and Herbicides (Methods 8081, 8082 & 8150)				
PCBs (Aroclor 1254)	0.033	0.012	0.033	0.033
Aldrin	0.002	0.002	0.0039	0.0039
alpha-BHC	0.002	0.002	0.062	0.062
beta-BHC	0.002	0.002	0.062	0.062
delta-BHC	0.002	0.002	0.062	0.062
Chlordane	0.002	0.002	0.0090	0.0090
2,4-D	0.025	--	0.025	0.025
4,4'-DDD	0.004	0.002	0.049	0.049
4,4'-DDE	0.004	0.002	0.098	0.098
4,4'-DDT	0.004	0.002	0.0082	0.0082
Dicamba	0.01	--	0.01	0.01
Dieldrin	0.004	0.002	0.039	0.030
Endosulfan	0.002	0.002	1.1	1.1
Endosulfan Sulfate	0.004	0.002	1.1	1.1

Table 5
Soil Cleanup Levels
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Potential Contaminant of Concern	QAPP Analytical Reporting Limit (mg/kg)	Laboratory Detection Limit (mg/kg)	Soil Cleanup Level (mg/kg)	Soil Cleanup Level (mg/kg)
			Recreational - Beach/Dune Ecological - Special Status	Residential - Beach/Dune Ecological - Special Status ¹
PCBs, Pesticides, and Herbicides (cont.)				
Endrin	0.004	0.002	0.004	0.004
Endrin Aldehyde	--	0.002	0.004	0.004
Endrin Ketone	0.004	0.002	0.004	0.004
gamma-BHC (Lindane)	0.002	0.002	0.010	0.010
Heptachlor	0.002	0.002	0.017	0.017
Heptachlor Epoxide	0.002	0.002	0.017	0.017
Isodrin	--	--	0.0039	0.0039
MCPP	5.0	--	5.0	5.0
Methoxychlor	0.02	0.02	0.44	0.44
Petroleum Hydrocarbons (Method 8015 Modified)				
TPH as gasoline (C7 - C12)	1.0	1	610	610
TPH as diesel (C12-C24)	10	1	700	700
TPH as fuel oil (C24-C36)	10	5	980	980
BTEX Compounds (Method 8260B)				
Benzene	0.005	0.005	1.5	0.6
Ethylbenzene	0.005	0.005	60	60
Toluene	0.01	0.005	270	270
Total Xylenes	0.005	0.005	55	55

Notes

Shading indicates target cleanup levels.

¹ Cleanup levels for soil are based on the most stringent of the values for protection of human health (recreational or residential land use), protection of ecological receptors (ecological special status species), and maintaining drinking water standards in groundwater (soils greater than 5 feet above groundwater). Source: Table 7-2 (non-petroleum compounds) and Table 7-5 (petroleum, hydrocarbons and constituents) in Cleanup Levels Document (EKI, 2002).

Table 6
Evaluation of Alternatives Summary
Fill Site 6A
 Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No Action for Soil and Groundwater	Construct Permeable Cover Over Waste and No Action for Groundwater	Construct Permeable Cover Over Waste and Monitor Groundwater	Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater	Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater
OBJECTIVE				
The objective of this alternative is to provide no further control or protection to human health or the environment for contamination that exists at FS 6A.	The objective of this alternative is to place a cover over the contaminated fill and soil to isolate the impacted area and prevent exposure to chemicals of concern.	The objectives of this alternative are to place a cover over the contaminated fill and soil to isolate the impacted area and prevent exposure to chemicals of concern; and to monitor for potential groundwater contamination.	The objectives of this alternative are to remove impacted fill and shallow soil contamination; and to monitor for potential groundwater contamination.	The objectives of this alternative are to remove impacted fill and shallow soil contamination; and to monitor for potential groundwater contamination.
THRESHOLD CRITERIA				
1) Overall protection of human health and the environment				
Alternative is not anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment, but does not address the potential groundwater impact issues.	Alternative is anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.
2) Compliance with ARARs				
Alternative is not anticipated to comply with ARARs.	Alternative may not comply with ARARs because groundwater monitoring is not included.	Alternative is expected to comply with ARARs.	Alternative is expected to comply with ARARs.	Alternative is expected to comply with ARARs.

Table 6
Evaluation of Alternatives Summary
Fill Site 6A
 Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No Action for Soil and Groundwater	Construct Permeable Cover Over Waste and No Action for Groundwater	Construct Permeable Cover Over Waste and Monitor Groundwater	Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater	Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater
BALANCING CRITERIA				
3) Long-term effectiveness and permanence				
Alternative will not offer long-term protection against exposure of humans and ecological receptors to contaminants of concern (COCs) in fill.	Alternative may offer long-term protection against exposure of humans and ecological receptors if the cover is maintained, land use controls are imposed, and no COCs are present in landfill that pose a leaching threat to groundwater.	Alternative may offer long-term protection against exposure of humans and ecological receptors if the cover is maintained, land use controls are imposed, and no COCs are present in landfill that pose a leaching threat to groundwater.	This alternative offers long-term effectiveness and permanence. The chemically impacted media is no longer present.	This alternative offers long-term effectiveness and permanence. The chemically impacted media is no longer present.
4) Reduction of Toxicity, Mobility, or Volume (TMV) through treatment				
Alternative will not reduce toxicity, mobility, or volume of COCs.	Alternative will not reduce toxicity or volume of fill.	Alternative will not reduce toxicity or volume of fill.	Alternative will not reduce toxicity or volume of fill.	Alternative will not reduce toxicity or mobility of COCs in soil, but will decrease volume of waste by segregating wastes and recycling usable material.
5) Short-term effectiveness				
Alternative is not anticipated to result in any short-term disruptions or risks to workers and the community.	This alternative would be protective of short-term human health exposures. Normal construction practices and OSHA standards would be employed to protect remedial construction workers. This process	This alternative would be protective of short-term human health exposures. Normal construction practices and OSHA standards would be employed to protect remedial construction workers. This process	This alternative would be protective of short-term human health exposures. Normal construction practices and OSHA standards would be employed to protect remedial construction workers. This process	This alternative would be protective of short-term human health exposures. Normal construction practices and OSHA standards would be employed to protect remedial construction workers. This process would

Table 6
Evaluation of Alternatives Summary
Fill Site 6A
 Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No Action for Soil and Groundwater	Construct Permeable Cover Over Waste and No Action for Groundwater	Construct Permeable Cover Over Waste and Monitor Groundwater	Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater	Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater
	would be effective immediately in terms of eliminating exposures to fill material.	would be effective immediately in terms of eliminating exposures to fill material.	be effective immediately in terms of eliminating exposures to fill material.	be effective immediately in terms of eliminating exposures to fill material.
6) Implementability				
Alternative requires no action.	The remedy is readily implementable.	The remedy is readily implementable.	The remedy is readily implementable.	This alternative can be implemented. Implementation of this alternative poses certain implementation difficulties in the segregation of materials and staging areas.
7) Cost				
Alternative has negligible costs associated with implementation.	Capital = \$1,300,000 Total Annual O&M (NPV)= \$410,000 Total Cost (NPV) = \$1,700,000	Capital = \$1,400,000 Total Annual O&M (NPV)= \$630,000 Total Cost (NPV) = \$2,000,000	Capital = \$4,000,000 Total Annual O&M (NPV)= \$160,000 Total Cost (NPV) = \$4,200,000	Capital = \$3,700,000 Total Annual O&M (NPV)= \$160,000 Total Cost (NPV) = \$3,900,000
MODIFYING CRITERIA				
8) State acceptance				
State of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) is unlikely to the no-action accept alternative.	DTSC is not likely to favor alternative, because although remedial action is protective of human health and the environment, it may not comply with ARARs, and the issue of potentially impacted groundwater is not addressed.	DTSC may not favor alternative, because although remedial action is protective of human health and the environment, it may not comply with ARARs.	DTSC is likely to favor alternative, because remedy is protective of human health and the environment, and complies with ARARs.	DTSC is likely to favor alternative because remedy is protective of human health and the environment, and complies with ARARs.

Table 6
Evaluation of Alternatives Summary
Fill Site 6A
 Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No Action for Soil and Groundwater	Construct Permeable Cover Over Waste and No Action for Groundwater	Construct Permeable Cover Over Waste and Monitor Groundwater	Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater	Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater
9) Community Acceptance				
No-action Alternative is anticipated to be disfavored by community members of the Restoration Advisory Board (RAB) and the community at large.	RAB may prefer removal alternatives since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.	RAB may prefer removal alternatives since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.	Alternative is likely to be acceptable to the RAB since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.	Alternative is likely to be acceptable to the RAB since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.
10) California Health and Safety Code Criteria				
The no-action alternative does not address the health and safety risks posed by the site, the effect of contamination on future uses and groundwater resources at the site, or the potential for migration of contamination from the site.	This alternative addresses some of the health and safety risks posed by the site, but will not monitor for potential migration of contamination from the site. A future threat to groundwater may arise due to the continued presence of fill and refuse.	This alternative addresses some of the health and safety risks posed by contamination at the site and monitors for potential contaminant migration from the site. However, a future threat to groundwater may arise due to the continued presence of fill and refuse.	This alternative addresses the human health and safety as well as ecological risks posed by contamination at the site or migration of contamination from the site. This remedy provides a cost effective remedial alternative for the site. This alternative will include some land disposal of excavated wastes; however, the potential future threat to groundwater will be significantly reduced by removing these wastes from an uncontrolled fill site.	This alternative addresses the human health and safety as well as ecological risks posed by contamination at the site or migration of contamination from the site. This remedy provides a cost effective remedial alternative for the site. This alternative will include some land disposal of excavated wastes; however, the potential future threat to groundwater will be significantly reduced by removing these wastes from an uncontrolled fill site.

Table 6
Evaluation of Alternatives Summary
Fill Site 6A
 Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
No Action for Soil and Groundwater	Construct Permeable Cover Over Waste and No Action for Groundwater	Construct Permeable Cover Over Waste and Monitor Groundwater	Excavate and Dispose of Soil and Waste Off-Site, and Monitor Groundwater	Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater
SUMMARY OF EVALUATION CRITERIA				
Alternative is Not Recommended. Alternative is not protective of human health and the environment, and does not comply with ARARs.	Alternative is Not Recommended. This alternative does not adequately address COCs in soil at concentrations above ecological cleanup levels within future alignment of Tennessee Hollow Riparian Corridor or the issue of potential groundwater contamination and migration.	Alternative is Not Recommended. This alternative does not adequately address COCs in soil at concentrations above ecological cleanup levels within future alignment of Tennessee Hollow Riparian Corridor.	Alternative is Acceptable Not the Preferred Remedy. Although alternative is likely to be protective of human health and the environment and is acceptable to DTSC and the community, it is not the most cost-effective alternative. Soil with COC concentrations greater than applicable cleanup levels will be removed to permitted off-site disposal facility. Groundwater monitoring is anticipated for the entire site. However, field conditions during construction may indicate that disposal is more appropriate than segregation and recycling.	Alternative is Recommended as the Preferred Remedy. Alternative is likely to be protective of human health and the environment and is acceptable to DTSC and the community. Soil with COC concentrations greater than applicable cleanup levels will be removed to a permitted off-site disposal facility. Groundwater monitoring is anticipated for the site.

Source: Table 10-18, *Revised Feasibility Study Report for Main Installation Sites* (EKI, 2003), with modifications.

Table 7
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No Action for Soil and Groundwater	Construct Low-Permeability Cover Over Waste and Monitor Surface Water and Groundwater	Excavate and Dispose of Soil and Waste Off-Site and Monitor Surface Water and Groundwater	Excavate, Recycle Waste and Segregate Soil and Monitor Surface Water and Groundwater
OBJECTIVE			
The objective of this alternative is to provide no additional control or protection to human health or the environment for contamination that exists at BBDA 3.	The objective of this alternative is to place a cover over the contaminated fill and soil to isolate the affected area and prevent exposure to associated chemicals of concern; and to monitor for potential surface water and groundwater contamination.	The objective of this alternative is to remove fill and shallow soil contamination and monitor for potential groundwater contamination.	The objective of this alternative is to remove fill and shallow soil contamination, segregate and recycle waste materials as feasible, and monitor for potential groundwater contamination.
THRESHOLD CRITERIA			
1) Overall protection of human health and the environment			
Alternative is not anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.
2) Compliance with ARARs			
Alternative is not anticipated to comply with ARARs.	Alternative may not comply with ARARs.	Alternative is anticipated to comply with ARARs.	Alternative is anticipated to comply with ARARs.
BALANCING CRITERIA			
3) Long-term effectiveness and permanence			
Alternative will not offer long-term protection against exposure of human and ecological receptors to contaminants of concern (COCs).	Alternative is anticipated to offer long-term effectiveness provided the low-permeability cover is maintained and land use controls imposed. Water monitoring would demonstrate that surface water and groundwater contamination is not present.	This alternative has long-term effectiveness and permanence. The impacted media is no longer present. Water monitoring would demonstrate that surface water and groundwater contamination is not present.	This alternative has long-term effectiveness and permanence. The impacted media is no longer present. Water monitoring would demonstrate that surface water and groundwater contamination is not present.

Table 7
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No Action for Soil and Groundwater	Construct Low-Permeability Cover Over Waste and Monitor Surface Water and Groundwater	Excavate and Dispose of Soil and Waste Off-Site and Monitor Surface Water and Groundwater	Excavate, Recycle Waste and Segregate Soil and Monitor Surface Water and Groundwater
4) Reduction of Toxicity, Mobility, or Volume (TMV) through treatment			
Alternative will not reduce toxicity, mobility, or volume of waste.	Alternative will not reduce toxicity or volume of waste.	Alternative will not reduce toxicity of waste.	Alternative will not reduce toxicity or mobility of COCs in soil but will decrease volume by segregating wastes and recycling usable material.
5) Short-term effectiveness			
Alternative is not anticipated to result in any short-term disruptions or risks to workers and the community.	Alternative poses less potential risk to workers and the community than excavation, as soil and fill will be largely undisturbed in constructing a low permeability cover over the landfill. Sensitive plant species are in this area, but efforts will be made to minimize negative impact, if any.	This alternative would be protective of short-term human health exposures. Normal construction practices and OSHA standards would be employed to protect remedial construction workers and the general public. Sensitive plant species are in the area, but efforts will be made to minimize negative impact, if any.	This alternative would be protective of short-term human health exposures for visitors. Normal construction practices and OSHA standards would be employed to protect remedial construction workers and the general public. Sensitive plant species are in the area, but efforts will be made to minimize negative impact, if any.
6) Implementability			
Alternative requires no action.	Alternative may be difficult to implement due to access and need to anchor cover on steep slopes. Also, the possibility of subsidence and differential settlement of landfill contents must be considered in design and construction of low-permeability cover system.	In spite of steep slopes, this alternative can be implemented. Potential control of odors and dust must be addressed.	This alternative can be implemented, but poses certain implementation difficulties in the segregation and material staging areas. Potential control of odors and dust must be addressed.
7) Cost			
Alternative has negligible costs associated with implementation.	Capital = \$2,500,00 Total Annual O&M (NPV) = \$910,000 Total Cost (NPV) = \$3,400,000	Capital = \$4,600,000 Total Annual O&M = \$150,000 Total Cost (NPV) = \$4,750,000	Capital = \$4,400,000 Total Annual O&M = \$150,000 Total Cost (NPV) = \$4,550,000

Table 7
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No Action for Soil and Groundwater	Construct Low-Permeability Cover Over Waste and Monitor Surface Water and Groundwater	Excavate and Dispose of Soil and Waste Off-Site and Monitor Surface Water and Groundwater	Excavate, Recycle Waste and Segregate Soil and Monitor Surface Water and Groundwater
MODIFYING CRITERIA			
8) State acceptance			
State of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) is unlikely to accept the no-action alternative.	It is expected that DTSC will consider this alternative to be acceptable.	It is expected that DTSC will consider this alternative to be acceptable.	It is expected that DTSC will consider this alternative to be acceptable.
9) Community Acceptance			
No-action Alternative is anticipated to be disfavored by community members of the Restoration Advisory Board (RAB) and the community at large.	RAB may prefer excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.	Alternative is likely to be an acceptable alternative to the RAB since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.	Alternative is likely to be an acceptable alternative to the RAB since the RAB has expressed a clear preference for excavation and removal of fill. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.
10) California Health and Safety Code Criteria			
The no-action alternative does not address the health and safety risks posed by the site, the effect of contamination on future uses and groundwater resources at the site, or the potential for migration of contamination from the site.	This alternative addresses some of the health and safety risks posed by contamination at the site and monitors for potential contaminant migration from the site. A future threat to groundwater may arise due to the continued presence of fill.	This alternative addresses the human health and safety as well as ecological risks posed by contamination at the site or migration of contamination from the site. This remedy provides a cost effective remedial alternative for the site. This alternative will include some land disposal of excavated wastes;	This alternative addresses the human health and safety as well as ecological risks posed by contamination at the site or migration of contamination from the site. This remedy provides a cost effective remedial alternative for the site. This alternative will include some land disposal of excavated wastes;

Table 7
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No Action for Soil and Groundwater	Construct Low-Permeability Cover Over Waste and Monitor Surface Water and Groundwater	Excavate and Dispose of Soil and Waste Off-Site and Monitor Surface Water and Groundwater	Excavate, Recycle Waste and Segregate Soil and Monitor Surface Water and Groundwater
		however, the potential for a future threat to groundwater will be significantly reduced by removing these wastes from an uncontrolled fill site.	however, the potential for a future threat to groundwater will be significantly reduced by removing these wastes from an uncontrolled fill site.
SUMMARY OF EVALUATION CRITERIA			
Alternative is Not Recommended. COC concentrations in soil may be greater than applicable cleanup levels and may pose unacceptable risks to human health and environment.	Alternative is Not Recommended. Alternative is likely to be protective of human health and the environment and acceptable to DTSC. This alternative will require land use controls, long-term monitoring and maintenance of the cover to protect potential receptors from exposure to COCs above applicable cleanup levels.	Alternative is Not Preferred Remedy. This alternative is not considered to be the most cost-effective alternative. Field conditions during construction may indicate that disposal is more appropriate than segregation and recycling.	Alternative is Recommended as the Preferred Remedy. Although more costly than a low-permeability cover, this alternative would provide a permanent solution, and remove COCs from soil.

Source: Table 10-36, *Revised Feasibility Study Report for Main Installation Sites* (EKI, 2003), with modifications.

Table 8
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 4
Presidio of San Francisco, California

Alternative 1	Alternative 2
No Further Action for Soil and Surface Water	Excavate and Dispose of Soil Off-Site and No Action for Surface Water
OBJECTIVE	
The objective of this alternative is to provide no additional control or protection to human health or the environment for contamination that exists in the soil at BBDA 4.	The objective of this alternative is to remove contaminated fill material.
THRESHOLD CRITERIA	
1) Overall protection of human health and the environment	
Alternative is not anticipated to be protective of human health and the environment.	Alternative is anticipated to be protective of human health and the environment.
2) Compliance with ARARs	
Alternative is not anticipated to comply with ARARs.	Alternative is anticipated to comply with ARARs.
BALANCING CRITERIA	
3) Long-term effectiveness and permanence	
Alternative may not offer long-term protection against exposure of human and ecological receptors to contaminants of concern (COCs) in soil or surface water.	Alternative will provide long-term protection against exposure of human and ecological receptors, as the impacted soil will be removed.
4) Reduction of Toxicity, Mobility, or Volume (TMV) through treatment	
Alternative will not reduce toxicity, mobility, or volume of waste.	Alternative will not reduce toxicity, mobility, or volume of waste.
5) Short-term effectiveness	
Alternative is not anticipated to result in any short-term disruptions or risks to workers and the community.	Alternative involves excavation of impacted soil. Normal construction health and safety practices and OSHA standards would be employed to protect remedial construction workers and the general public.
6) Implementability	
Alternative is readily implementable.	Alternative can be readily implemented, as it involves standard excavation procedures.

Table 8
Evaluation of Alternatives Summary
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Alternative 1	Alternative 2
No Further Action for Soil and Surface Water	Excavate and Dispose of Soil Off-Site and No Action for Surface Water
7) Cost	
Alternative has negligible costs associated with implementation.	Capital = \$120,000 Annual O&M = \$0 Total Cost (NPV) = \$120,000
MODIFYING CRITERIA	
8) State acceptance	
State of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) may not accept alternative.	DTSC is anticipated to accept alternative because the remedial action is protective of human health and the environment, and complies with ARARs.
9) Community acceptance	
Alternative is expected to be disfavored by community members of the Restoration Advisory Board (RAB) and the community at large.	Alternative is anticipated to be accepted by the RAB and the community at large. Nearby residents may be concerned about noise, odors, and vehicular traffic during implementation of remedial action.
10) State of California Health and Safety Code Criteria	
This alternative does not address the health and safety risks posed by the site, the effect of contamination on future uses and groundwater resources at the site, or the potential for migration of contamination from the site.	This alternative addresses the human health and safety as well as ecological risks posed by contamination at the site or migration of contamination from the site. This remedy provides a cost effective remedial alternative for the site. This alternative will include some land disposal of excavated wastes; however, the potential for a future threat to groundwater will be significantly reduced by moving these wastes from an uncontrolled fill site to a licensed landfill.
SUMMARY OF EVALUATION CRITERIA	
Alternative is Not Recommended. COC concentrations in soil are greater than applicable cleanup levels and may pose unacceptable risks to human health and environment.	Alternative is Recommended as the Preferred Remedy. Soil with COC concentrations that are greater than applicable cleanup levels and may pose unacceptable risks to human health and the environment will be removed.

Source: Table 10-37, *Revised Feasibility Study Report for Main Installation Sites* (EKI, 2003), with modifications.

Table 9
Summary of Estimated Capital, Annual, and Total Costs for Remedial Action Alternatives
Fill Site 6A and Baker Beach Disturbed Areas 3 and 4
Presidio of San Francisco, California

Site	Remedial Alternative Description	Capital	Maintenance/	Present Worth	Present Worth
		Costs ¹ (2002 Dollars)	Water Monitoring Period ² (years)	Total Annual Maintenance & Monitoring Costs ³ (2002 Dollars)	Total Estimated Costs (2002 Dollars)
Fill Site 6A	1) No Action for Soil and Groundwater	\$ ---	0/0	\$ ---	\$ ---
	2) Maintain Existing Permeable Cover Over Waste and No Action for Groundwater	\$ 1,300,000	30/0	\$ 410,000	\$ 1,710,000
	3) Maintain Existing Permeable Cover Over Waste and Monitor Groundwater	\$ 1,400,000	30/10	\$ 630,000	\$ 2,030,000
	4) Excavate and Dispose of Waste and Soil Off-site, and Monitor Groundwater	\$ 4,000,000	0/3	\$ 160,000	\$ 4,160,000
	*5) Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater	\$ 3,700,000	0/3	\$ 160,000	\$ 3,860,000
Baker Beach Disturbed Area 3	1) No Action for Soil and Groundwater	\$ ---	0/0	\$ ---	\$ ---
	2) Construct Low-Permeability Cover Over Waste and Monitor Groundwater	\$ 2,500,000	30/10	\$ 910,000	\$ 3,410,000
	3) Excavate and Dispose of Soil and Waste Off-site, and Monitor Groundwater	\$ 4,600,000	0/3	\$ 150,000	\$ 4,750,000
	*4) Excavate, Recycle Waste and Segregate Soil, and Monitor Groundwater	\$ 4,400,000	0/3	\$ 150,000	\$ 4,550,000
Baker Beach Disturbed Area 4	1) No Action for Soil and Surface Water	\$ ---	0/0	\$ ---	\$ ---
	*2) Excavate and Dispose of Soil Off-site and No Action for Surface Water	\$ 120,000	0/0	\$ ---	\$ 120,000

Notes

* Recommended remedial action alternative.

¹ All estimated costs are from the Main Installation Sites FS except for FS 6A and BBDA 3, where the unit cost of off-site disposal for Class II waste has been reduced from \$60/ton to \$35/ton and unit cost of disposal as daily cover at Class III facility has been reduced from \$30/ton to \$24/ton.

² Consistent with U.S. EPA *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA, 2000) annual maintenance costs will be experienced for 30 years for remedial alternatives that leave construction debris in place, because cover maintenance will require "perpetual care". In addition, groundwater monitoring costs at such sites will be assumed to be conducted for 10 years when waste is left in place, even though the Trust may receive regulatory approval for terminating groundwater monitoring sooner, based on groundwater data. Consistent with the requirements specified in Title 27 of the California Code of Regulations for clean closure of a landfill, present worth of total estimated costs assume that 3 years of groundwater monitoring will be performed for the remedial alternatives involving full excavation and disposal of landfill contents at an off-site, permitted facility. Cover maintenance at such sites will not be required.

³ Consistent with U.S. EPA *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA, 2000) present worth of total estimated costs have been calculated assuming a real discount rate of 3.9 percent. The real discount rate is assumed to be equivalent to the nominal interest rate on 30-year federal treasury notes and bonds upon adjustment to remove the effect of expected inflation. The real discount rate has been estimated following guidelines in Circular No. A-94 published by the Federal Office of Management and Budget, February 2002.

Table 10
Groundwater and Surface Water Monitoring Programs for Preferred Alternatives
Fill Site 6A and Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Site Name	Location ID	New or Existing Sampling Location	Monitoring Well Rationale	Analytical Requirements				
				Metals and TDS ¹	Mercury	Total Petroleum Hydrocarbons ²	General Water Quality ³	Dissolved Oxygen ⁴
				EPA 6010/6020 and 160.1	EPA 7470	EPA 8015/EPA 3630A	various	(field probe)
Fill Site 6A	LF6GW103	Existing	Monitor groundwater level and metals downgradient of FS 6A.	Q	Q'	--	Q	Q
	LF6GW104	New	Monitor groundwater level and metals downgradient of FS 6A.	Q	Q'	--	Q	Q
	LF6GW105	New	Monitor groundwater level and metals upgradient of FS 6A.	Q	Q'	--	Q	Q
	231GW09	Existing	Monitor groundwater level and metals downgradient of FS 6A.	Q	Q'	--	Q	Q
BBDA 3	BB3GW100	New	Monitor groundwater level and chemistry within the impacted area of BBDA 3.	Q	--	Q	Q	Q
	BB3GW101	New	Monitor groundwater level and chemistry within the impacted area of BBDA 3.	Q	--	Q	Q	Q
	BB3GW102	New	Monitor groundwater level and chemistry within the impacted area of BBDA 3.	Q	--	Q	Q	Q
	BB3SW100	Existing	Monitor surface water chemistry downslope and downgradient of BBDA 3.	Q	--	Q	Q	Q

Notes

Q = Quarterly sampling. Analytical frequency will be reduced to semi-annual for each analyte that is not detected above the groundwater cleanup level for four consecutive quarters. Analysis will be stopped for each analyte that subsequently is not detected above groundwater cleanup levels for four consecutive monitoring events. All data will be reviewed after three years of monitoring. Groundwater levels will be measured quarterly at time of sampling.

Q' = Quarterly sampling for four consecutive quarters. If mercury is not detected above the groundwater cleanup level for four consecutive monitoring events, analysis will be stopped.

¹ Dissolved Metals include: Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Nickel, Potassium, Silver, Sodium, Selenium, Thallium, Vanadium, Zinc. Samples will also be analyzed for Total Dissolved Solids by EPA 160.1.

² Samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), diesel (TPHd), and fuel oil (TPHfo), with respective carbon ranges of C7 - C12, C12 - C24, and C24 - C36, by EPA Method 8015M with silica gel cleanup by EPA Method 3630A.

³ General Water Quality Parameters include: alkalinity, bicarbonate, chloride, fluoride, nitrogen as nitrate, nitrogen as nitrite, sulfate.

⁴ Dissolved Oxygen (DO) concentration will be included in field sampling logs. DO values should be recorded immediately before sample collection.

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FIGURES

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1000 0 1000 Feet

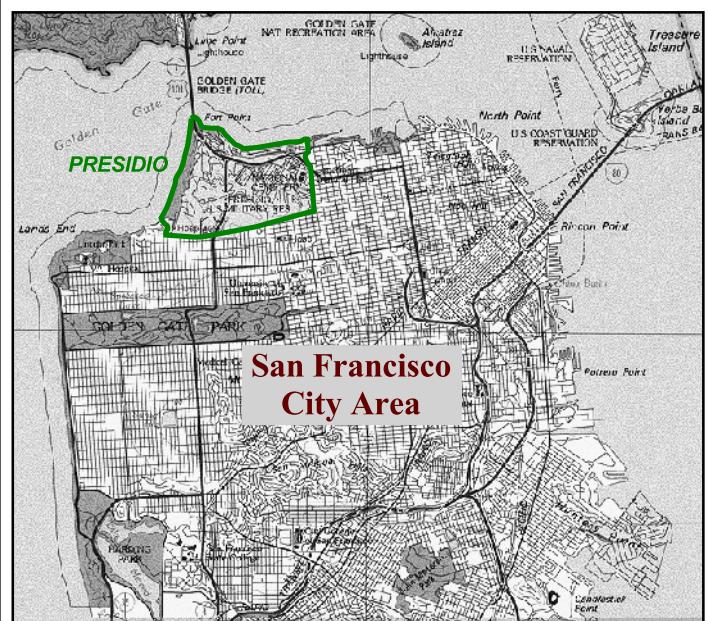
— Area A and B boundary

Notes:
Baker Beach Disturbed Area 3, Baker Beach Disturbed Area 4, and Fill Site 6A are the sites addressed in this RAP.

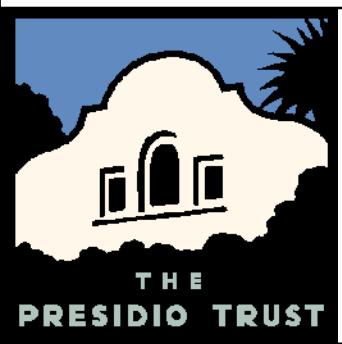
Fill Site 6B will be addressed in a subsequent regulatory decision document.

Area A Administration by the National Park Service.

Area B Administration by the Presidio Trust.



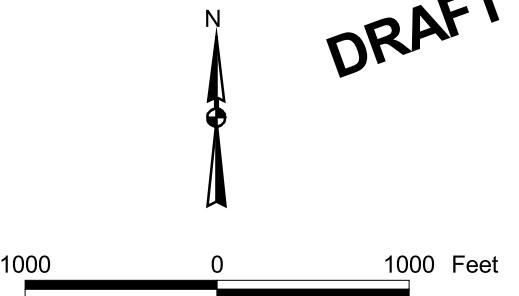
SITE LOCATION MAP



Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 561-5315
August 2003

FIGURE 1

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— Area A and B boundary

Notes:
Baker Beach Disturbed Area 3, Baker Beach Disturbed Area 4, and Fill Site 6A are the sites addressed in this RAP.

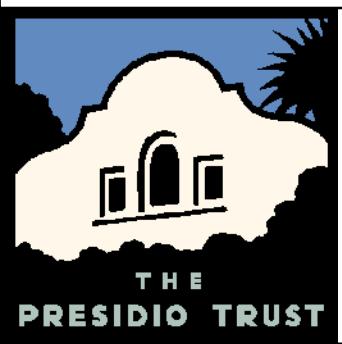
Fill Site 6B will be addressed in a subsequent regulatory decision document.

Area A Administration by the National Park Service.

Area B Administration by the Presidio Trust.

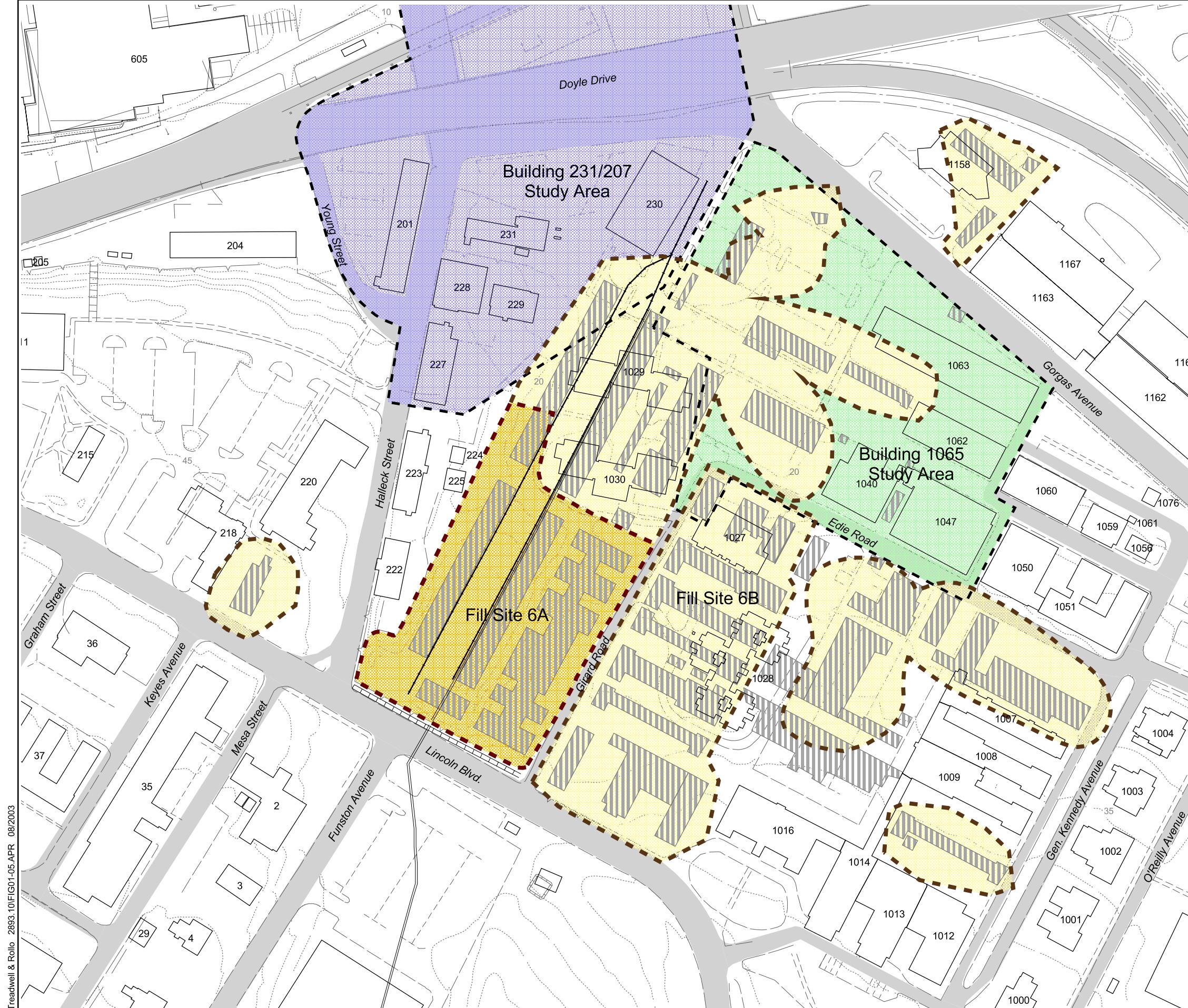


SITE LOCATION MAP



Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 561-5315
August 2003

FIGURE 1



LEGEND

- Topographic Contour (Contour Interval: 5 ft)
- Maximum Extent of Fill Site 6A Excavation
- Estimated Limits of fill areas within Fill Site 6B
- - - Building 1065 and Building 231/207 Study Areas
- Generalized Excavation Area Assumed to Have Contaminants of Concern in Soil
- Building and Number
- Demolished Buildings
- Rail Spur
- Box Culvert
- Potential Historic Stone Wall

(from NPS Archives map
oversize roll 37188
dated 1936)

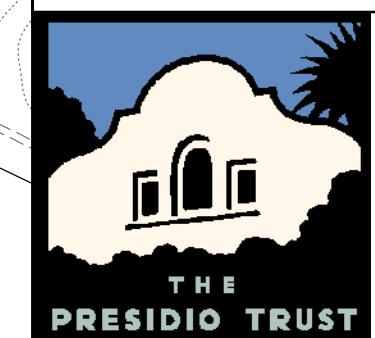
Notes:
Location of limits of fill from Revised Main Installation Sites Feasibility Study (EKI, 2003).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum: Presidio Lower Low Water (ft. PLLW) (groundwater)
North American Vertical Datum (NAVD88) (topography)

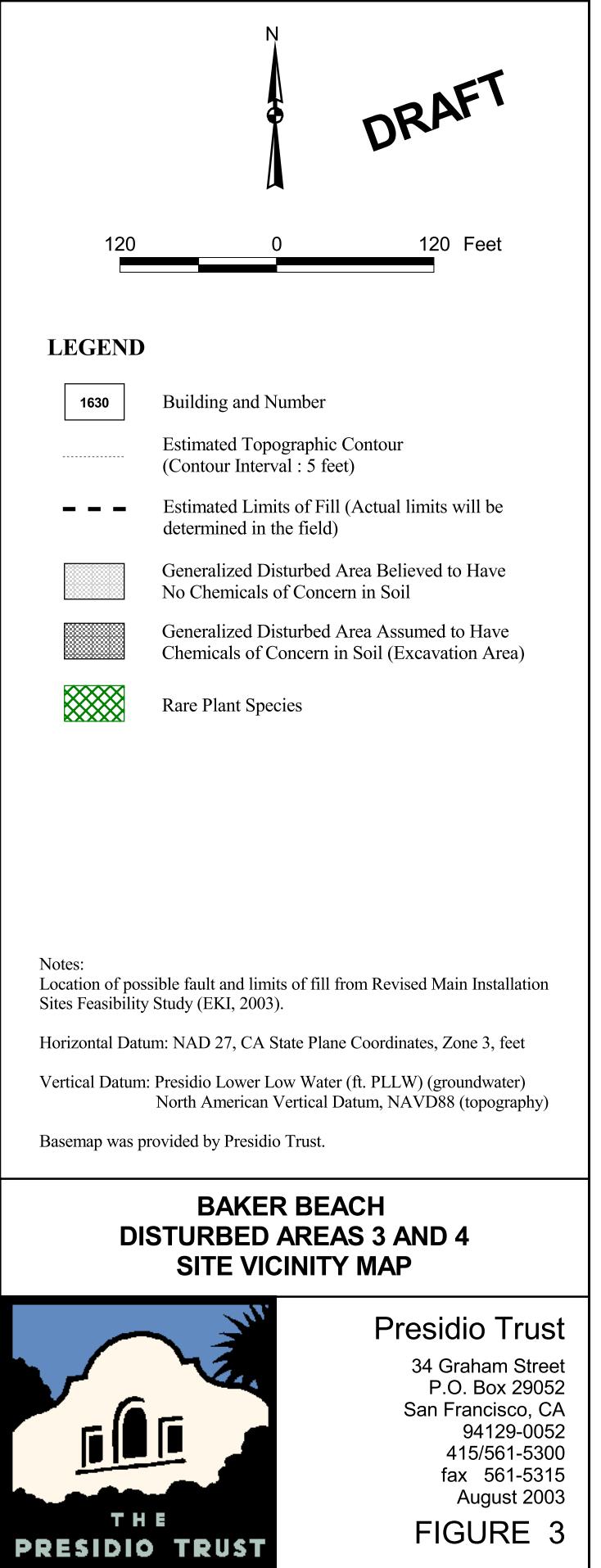
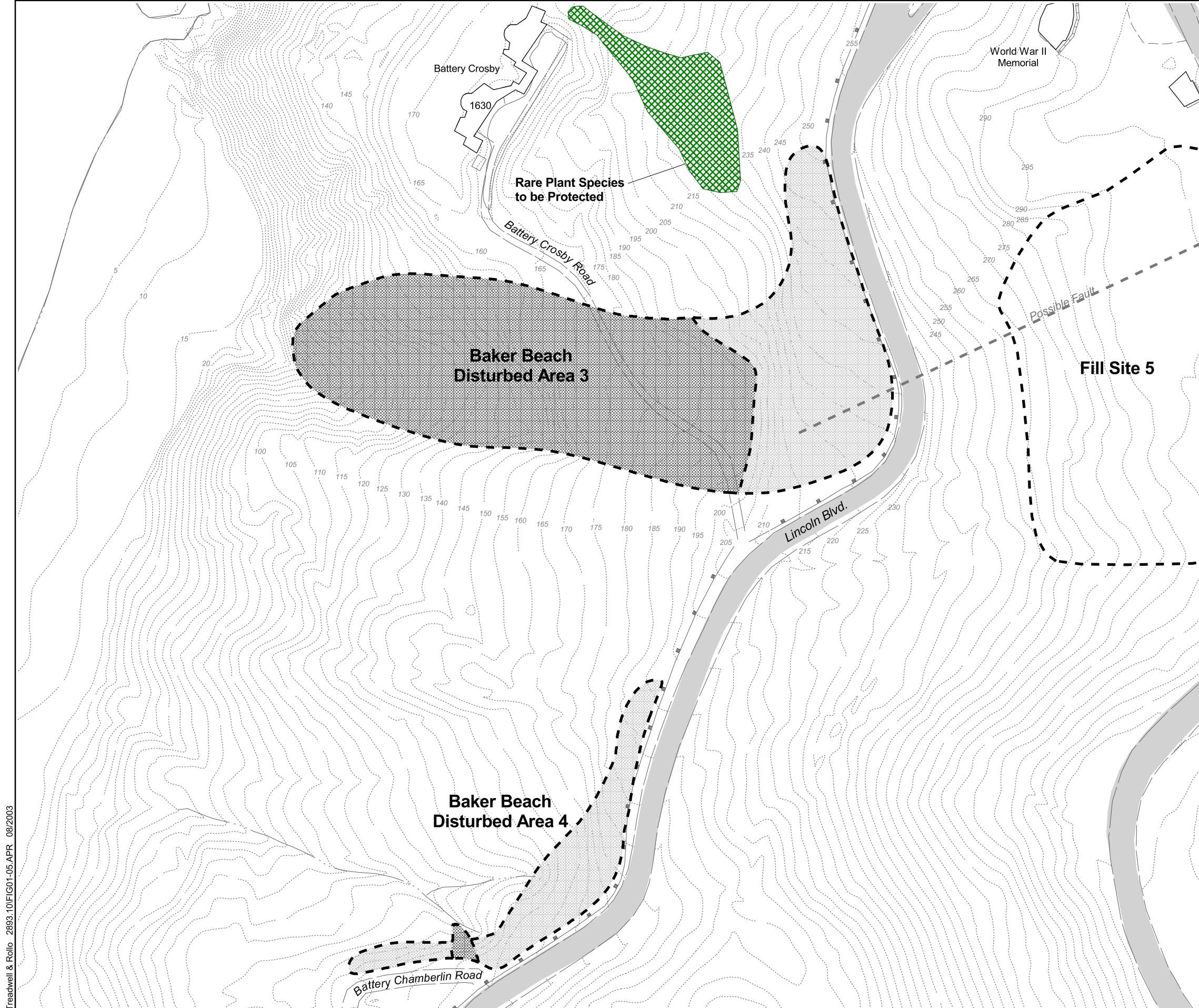
Basemap was provided by Presidio Trust.

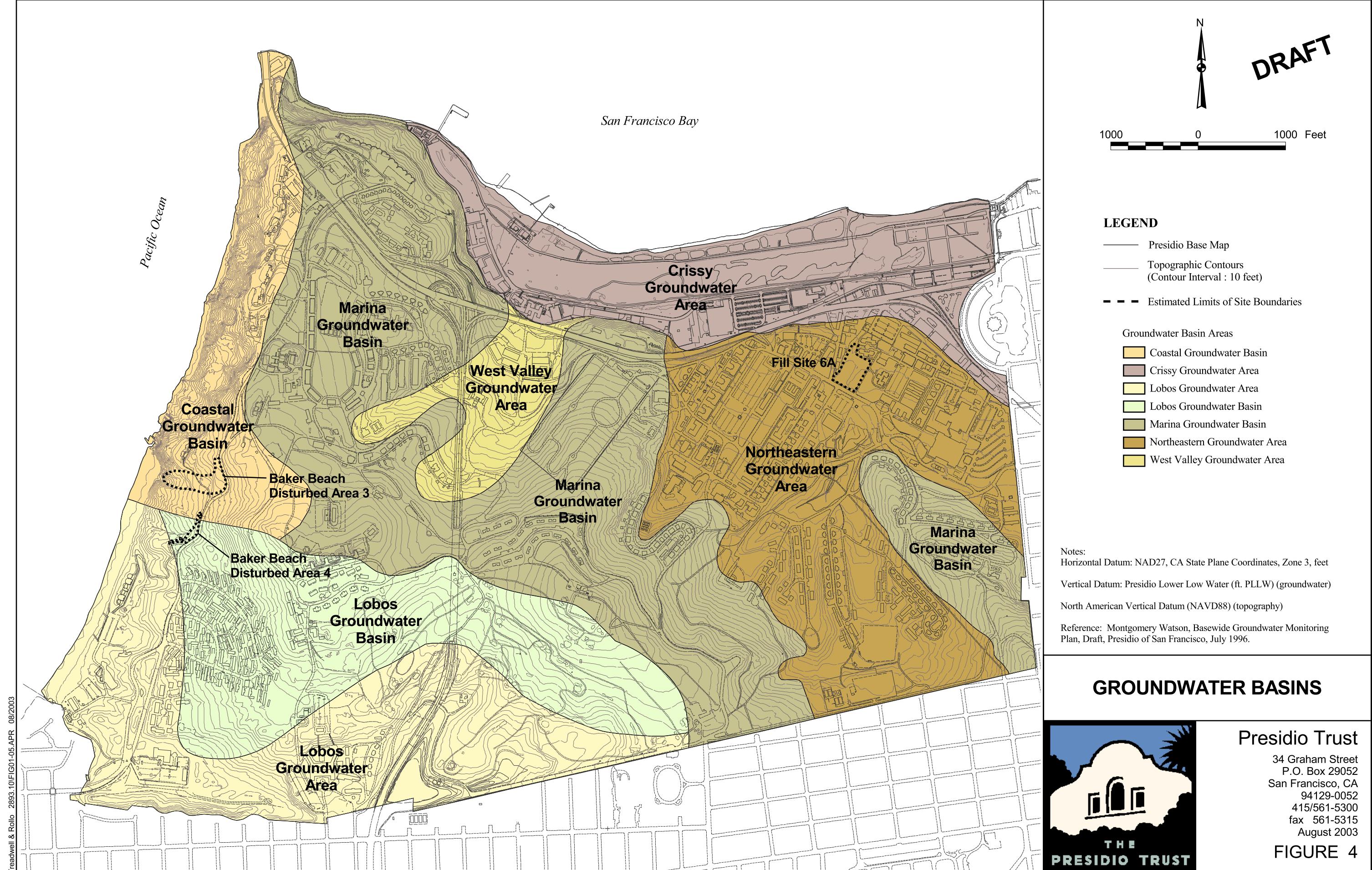
FILL SITE 6A SITE VICINITY MAP



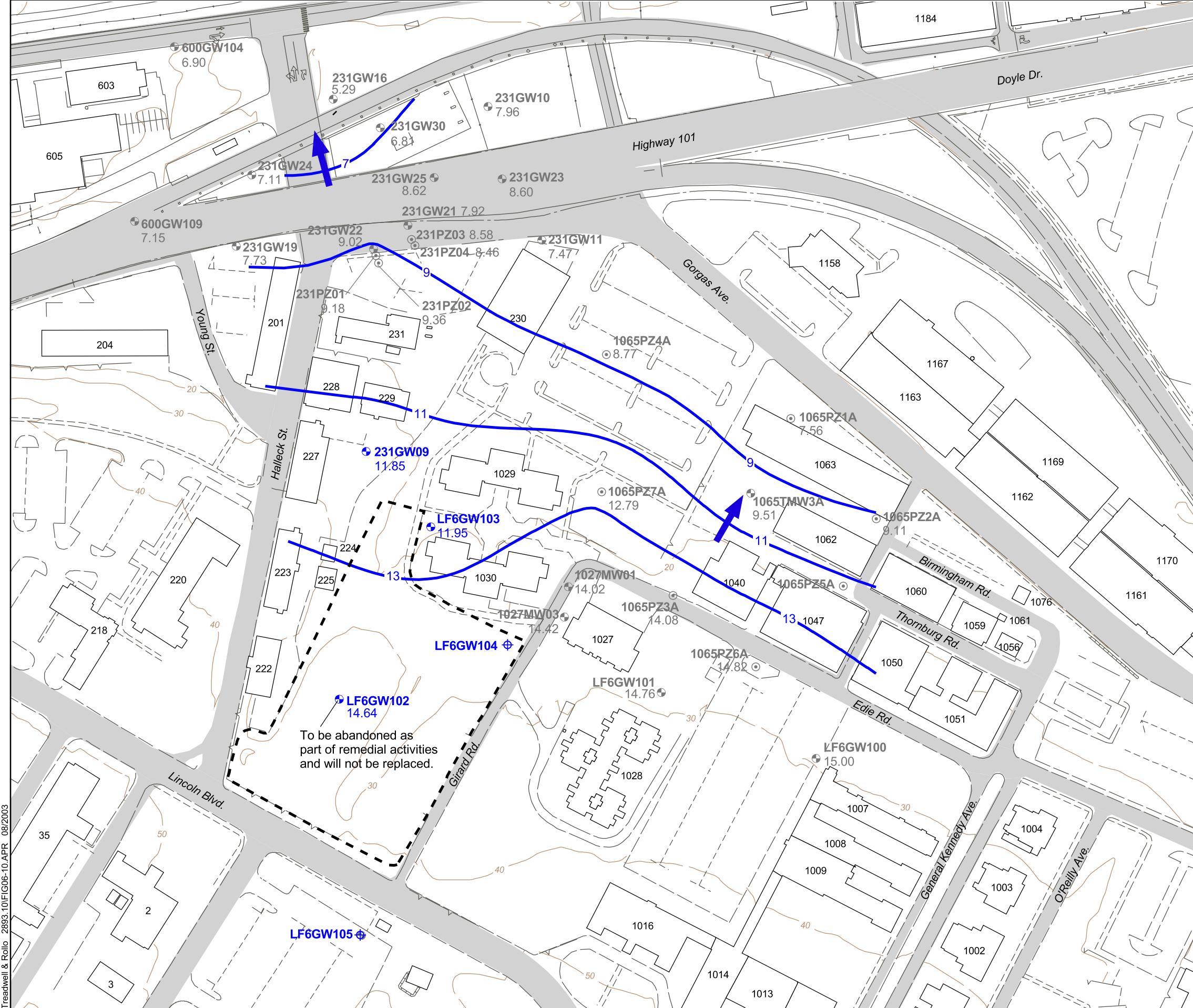
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August 2003

FIGURE 2









Notes:
Groundwater elevation data collected on 2 December 2002. Shallow monitoring wells were used in groundwater contouring.

Locations of proposed monitoring wells are approximate and will be finalized in the Implementation Work Plan.

Monitoring well LF6GW102 will be abandoned prior to beginning of excavation work and will not be replaced afterwards.

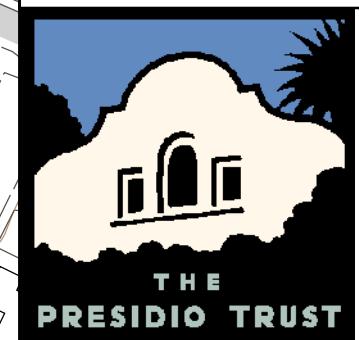
Location of limits of fill from Revised Main Installation Sites Feasibility Study (EKI, 2003).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum: Presidio Lower Low Water (ft. PLLW)

Basemap was provided by Presidio Trust

FILL SITE 6A GROUNDWATER MONITORING NETWORK



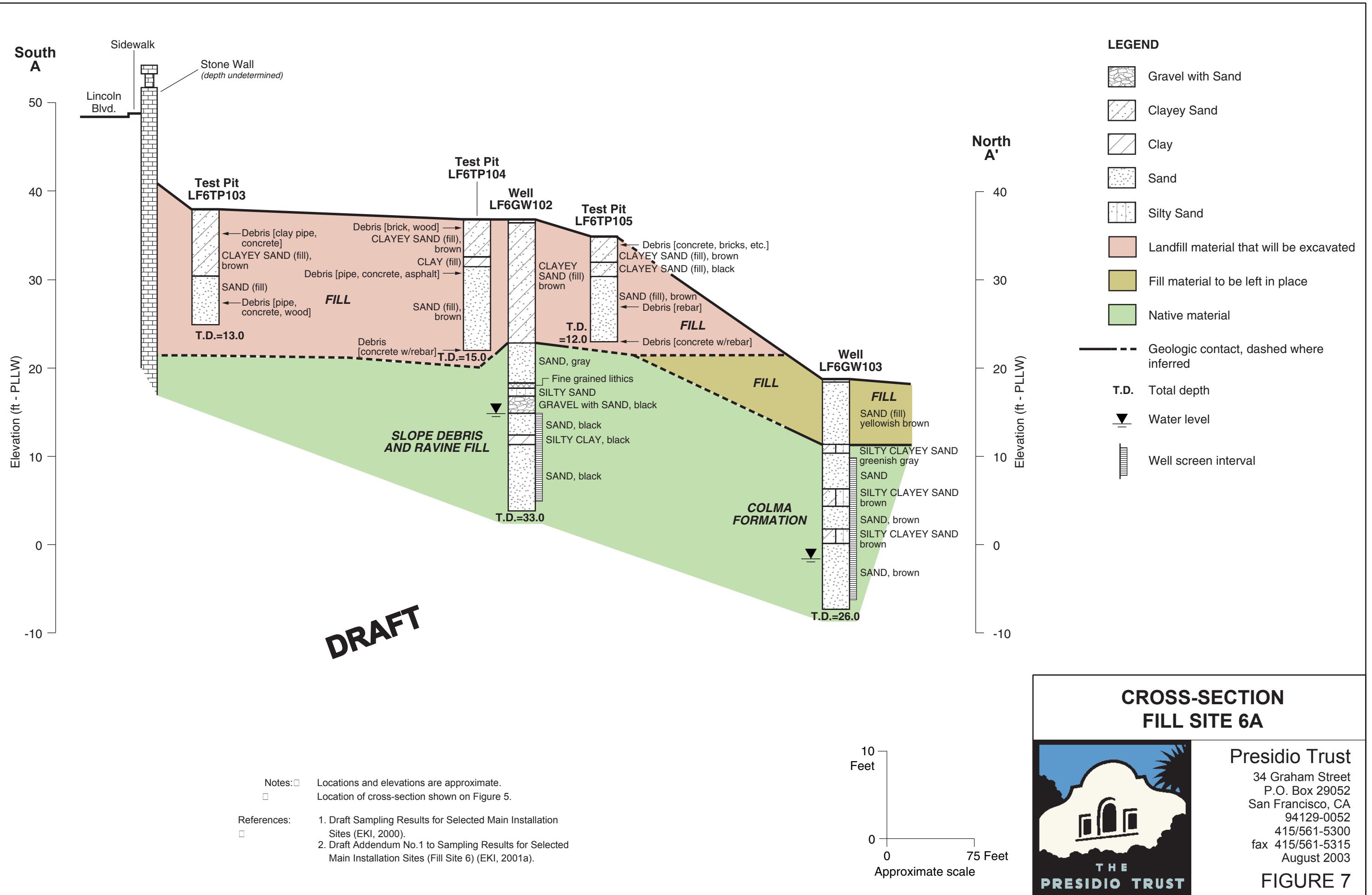
Presidio Trust
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415/561-5300
fax 561-5315
August 2003

FIGURE 6

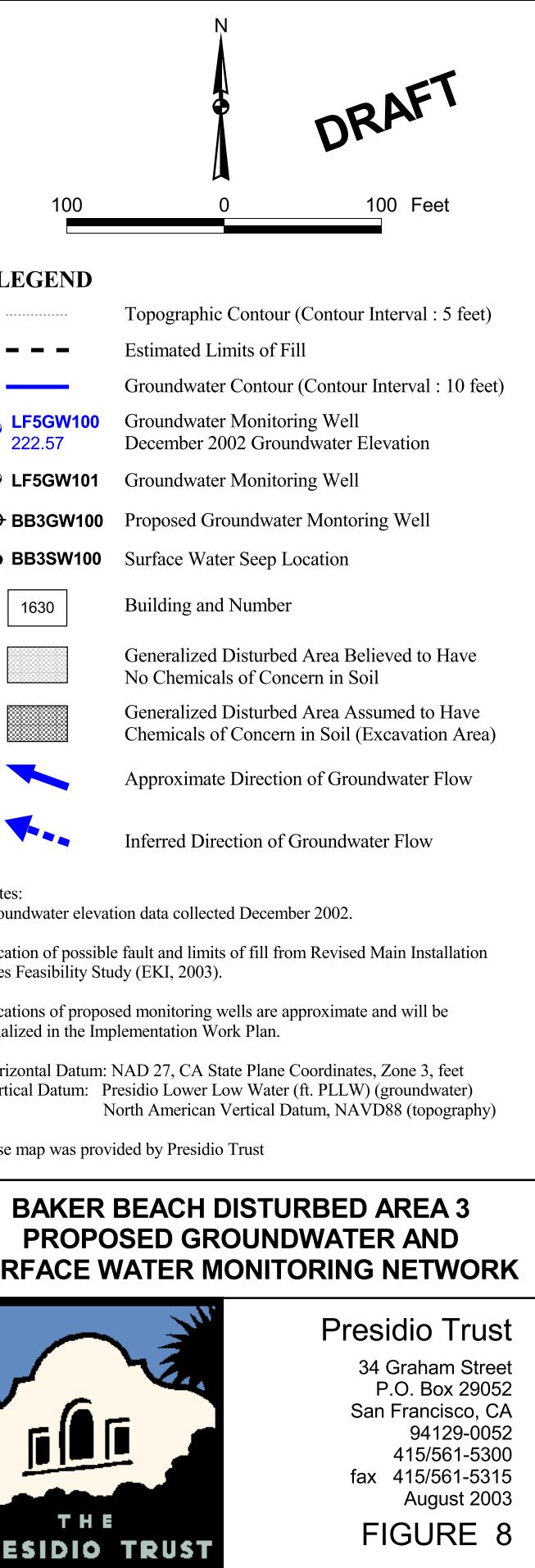
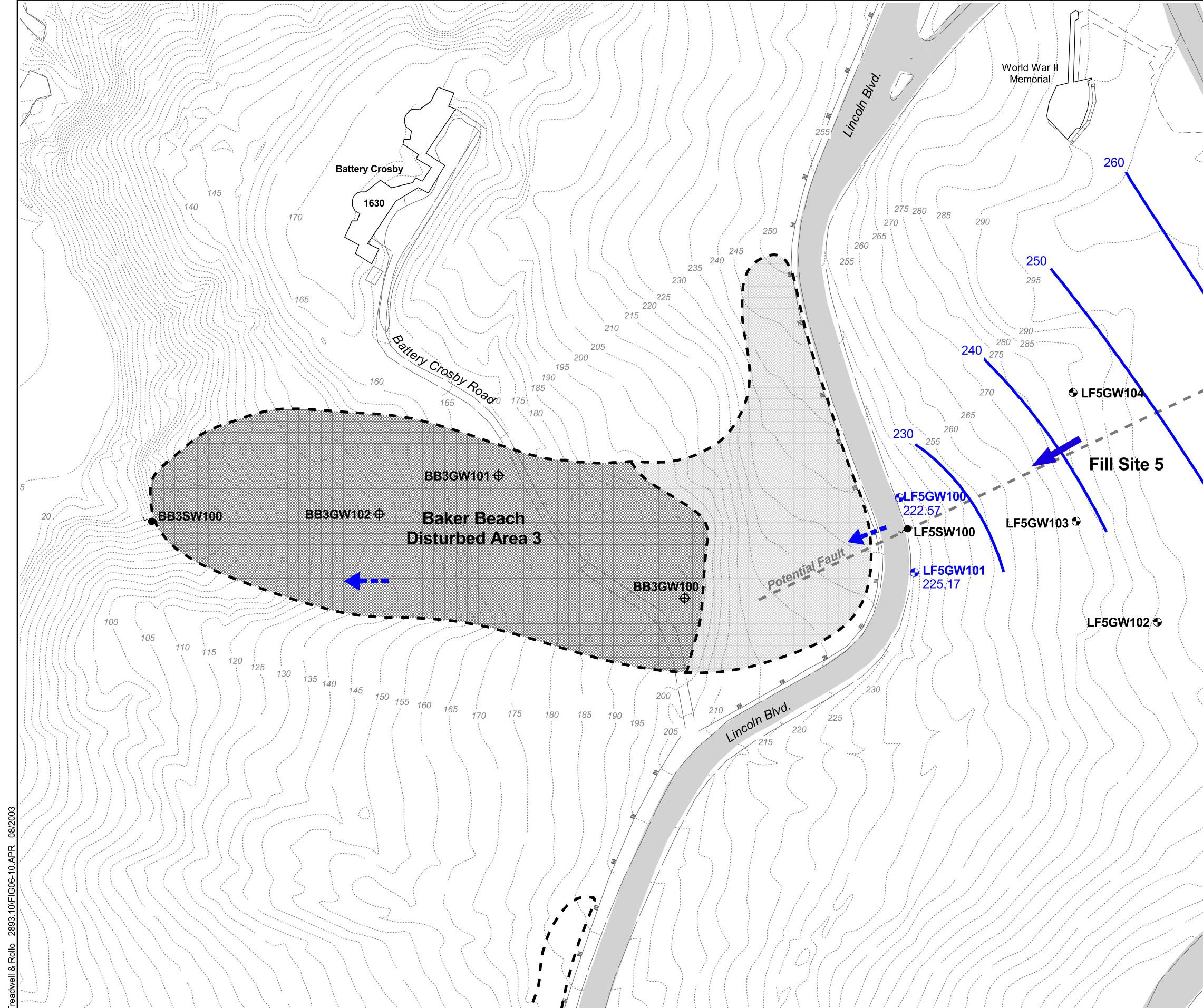
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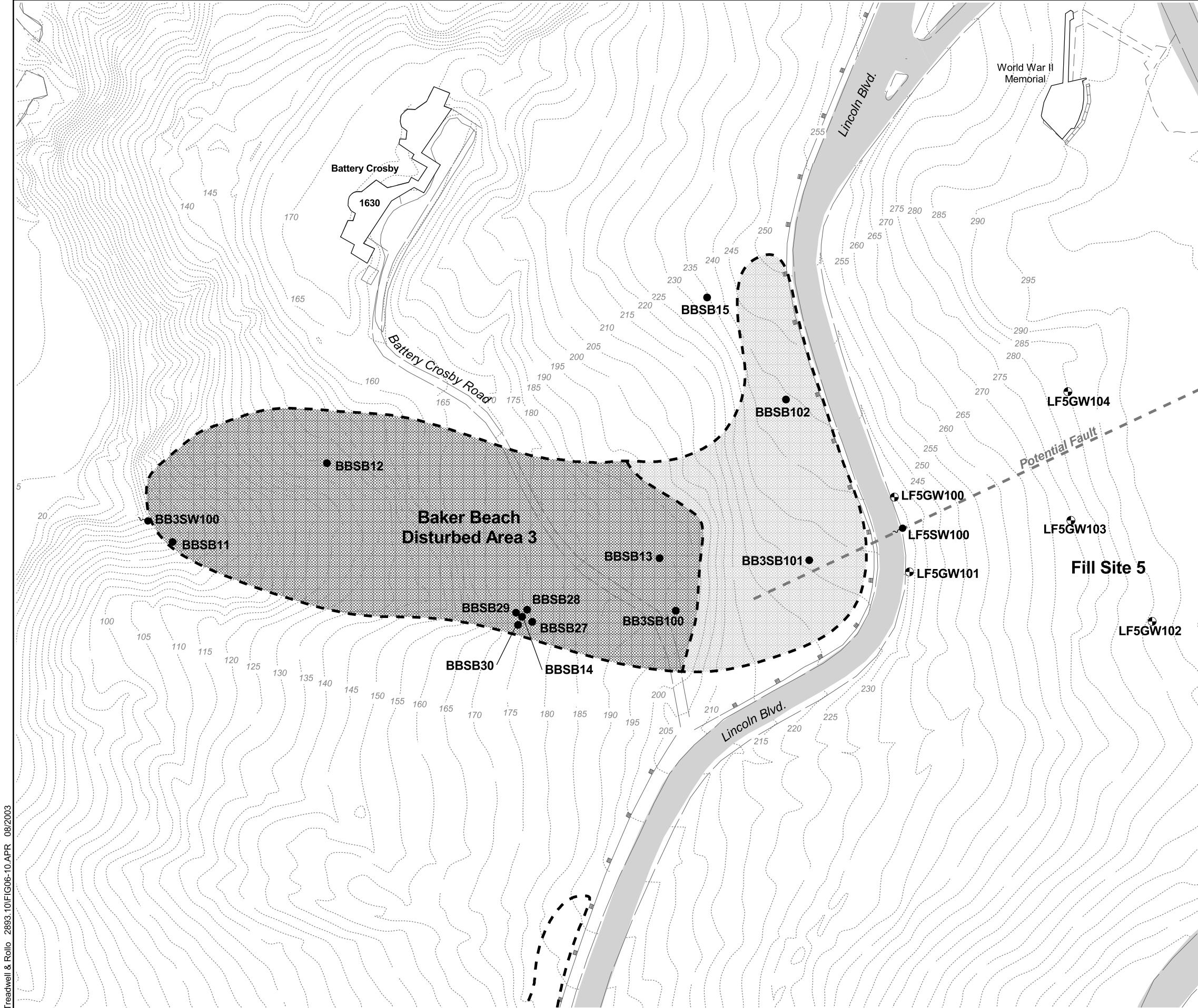
LEGEND

- Topographic Contour (Contour Interval : 10 ft)
- Groundwater Contour (Contour Interval : 2 ft)
- LF6GW102 14.64 Fill Site 6A Shallow Groundwater Monitoring Well December 2002 Groundwater Elevation
- 231GW21 7.92 Adjacent Shallow Groundwater Monitoring Well December 2002 Groundwater Elevation
- LF6GW104 Proposed Fill Site 6A Shallow Groundwater Monitoring Well
- Shallow Piezometer
- Building and Number
- Maximum Extent of Fill Site 6A Excavation
- Approximate Direction of Groundwater Flow



2893.10/CROSS SECTION A-A'.AI 06/2003





100 0 100 Feet

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LEGEND

- Topographic Contour (Contour Interval : 5 feet)
- - - Estimated Limits of Fill
- BB3SW100 Surface Water Seep Location
- BB3SB100 Soil Boring
- LF5GW100 Groundwater Monitoring Well
- 1630 Building and Number
- Generalized Disturbed Area Believed to Have No Chemicals of Concern in Soil
- Generalized Disturbed Area Assumed to Have Chemicals of Concern in Soil (Excavation Area)

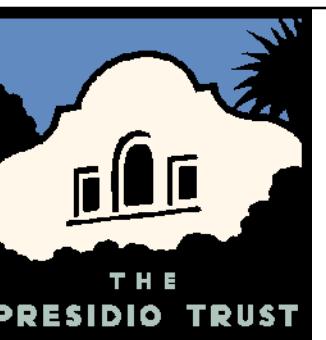
Notes:
Location of possible fault and limits of fill from Revised Main Installation Sites Feasibility Study (EKI, 2003).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum: Presidio Lower Low Water (ft. PLLW) (groundwater)
North American Vertical Datum, NAVD88 (topography)

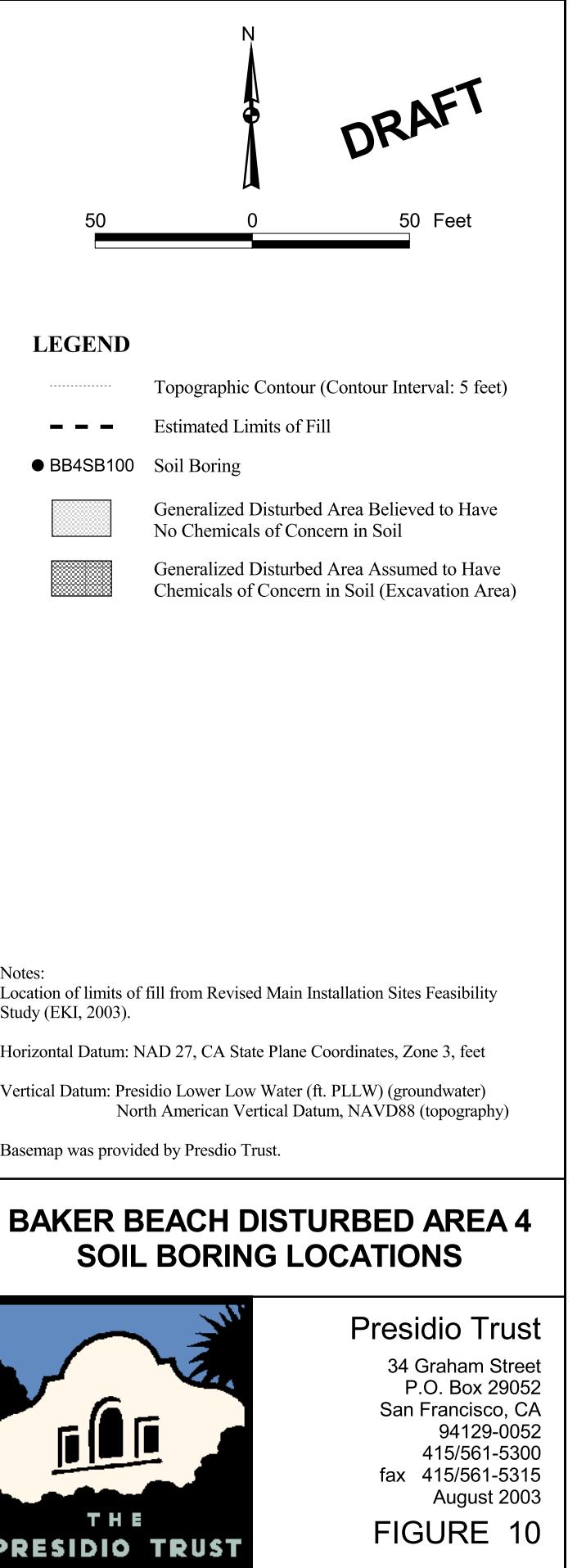
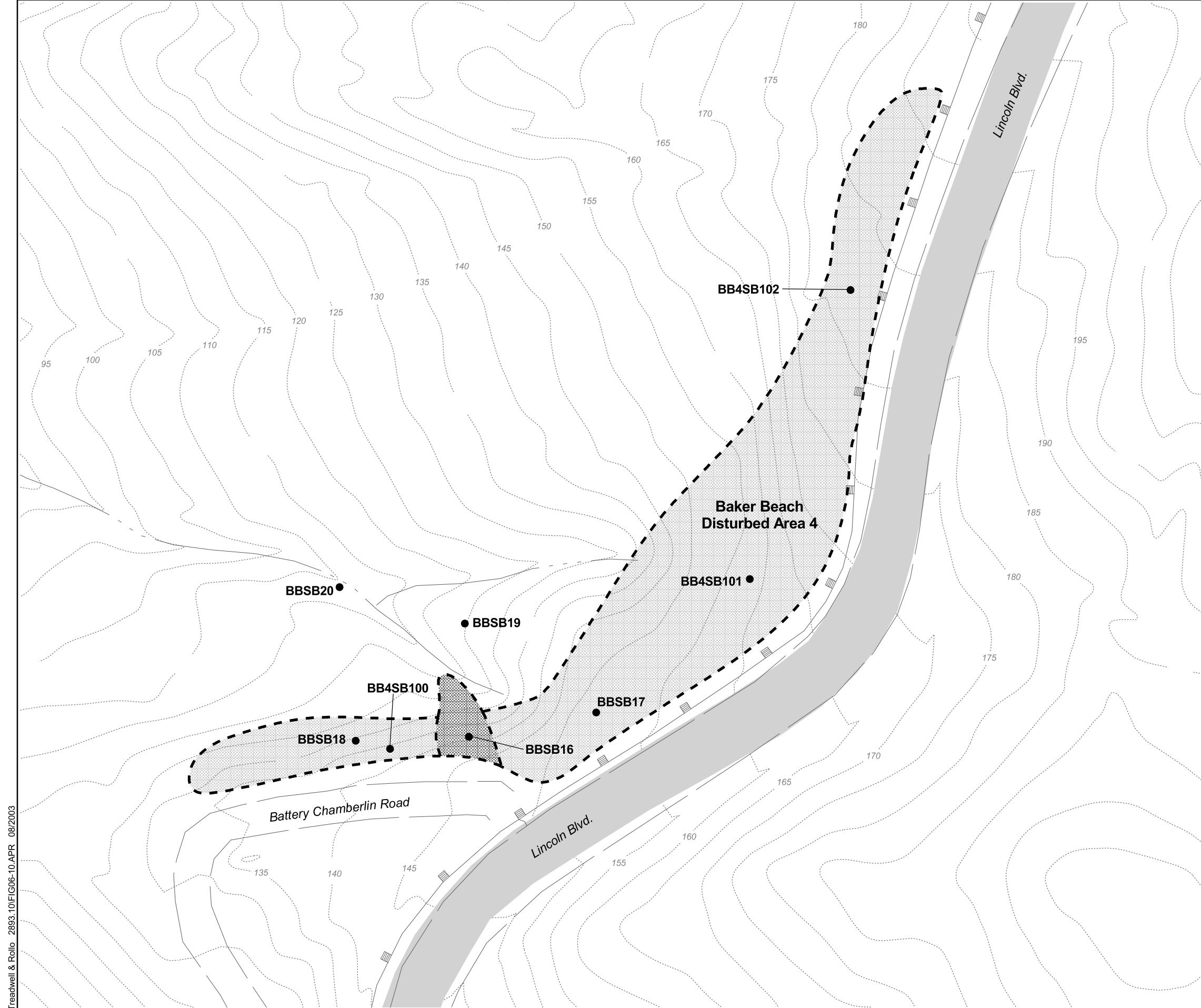
Basemap was provided by Presidio Trust.

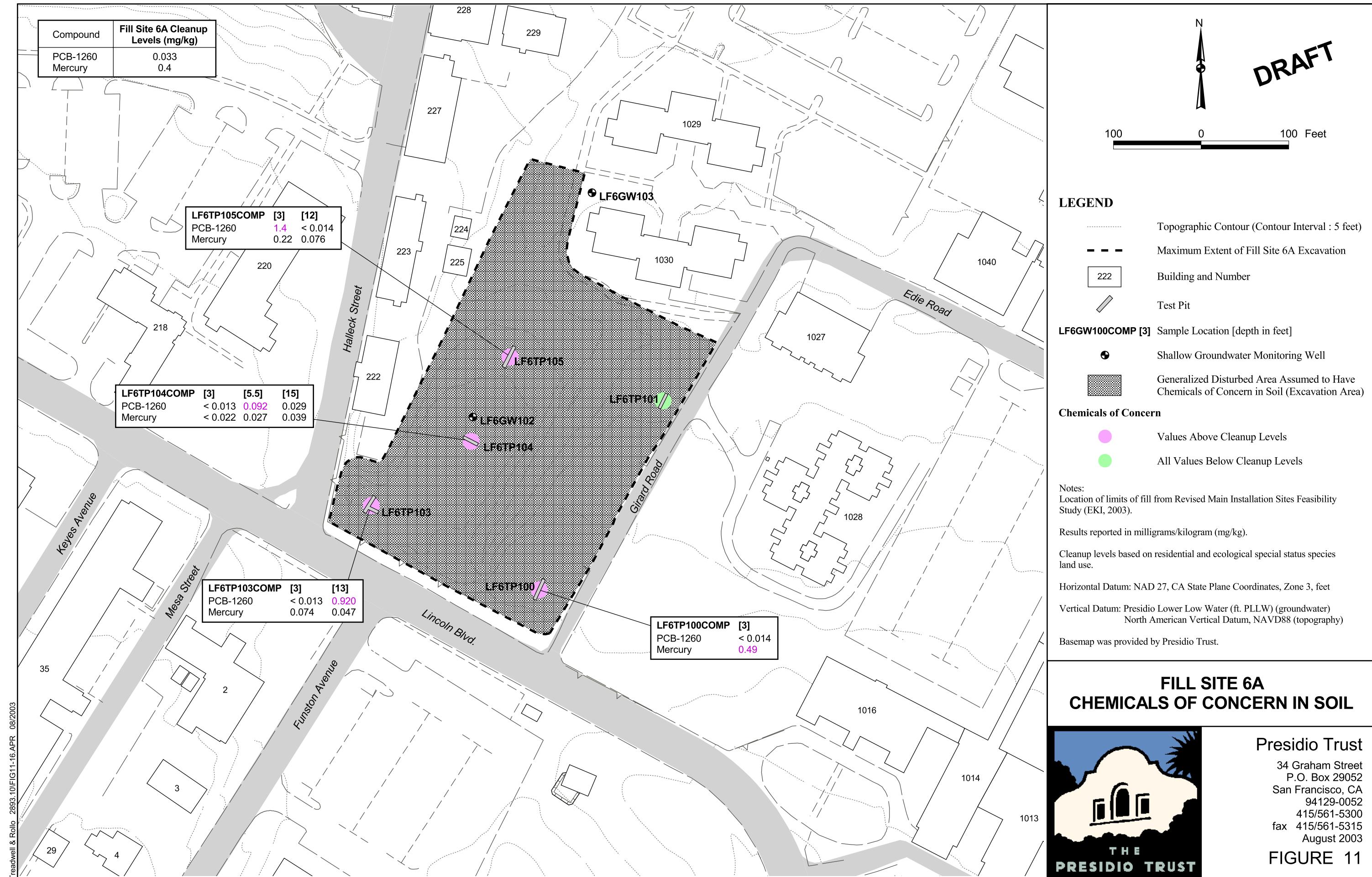
BAKER BEACH DISTURBED AREA 3 SOIL BORING LOCATIONS

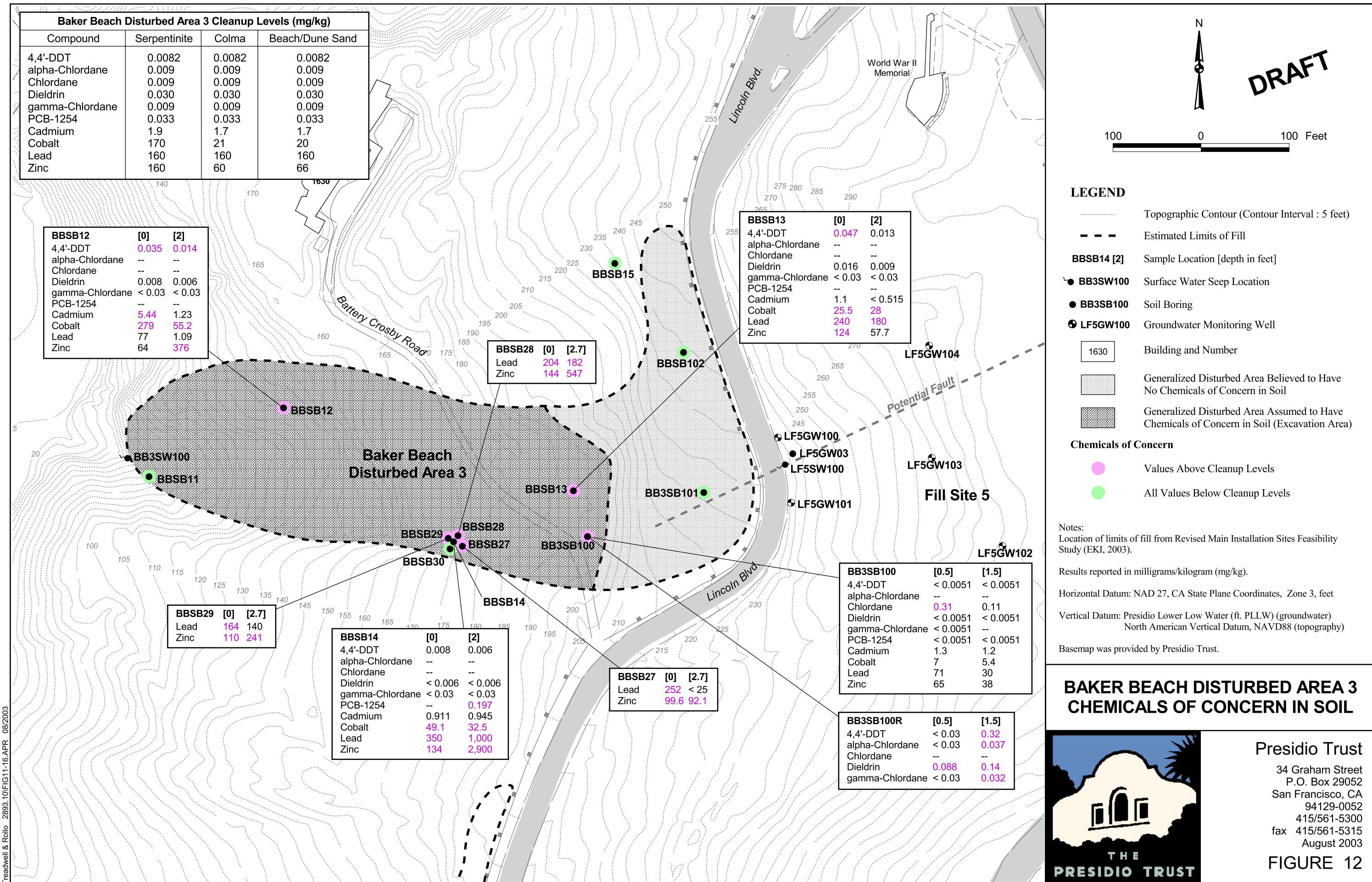


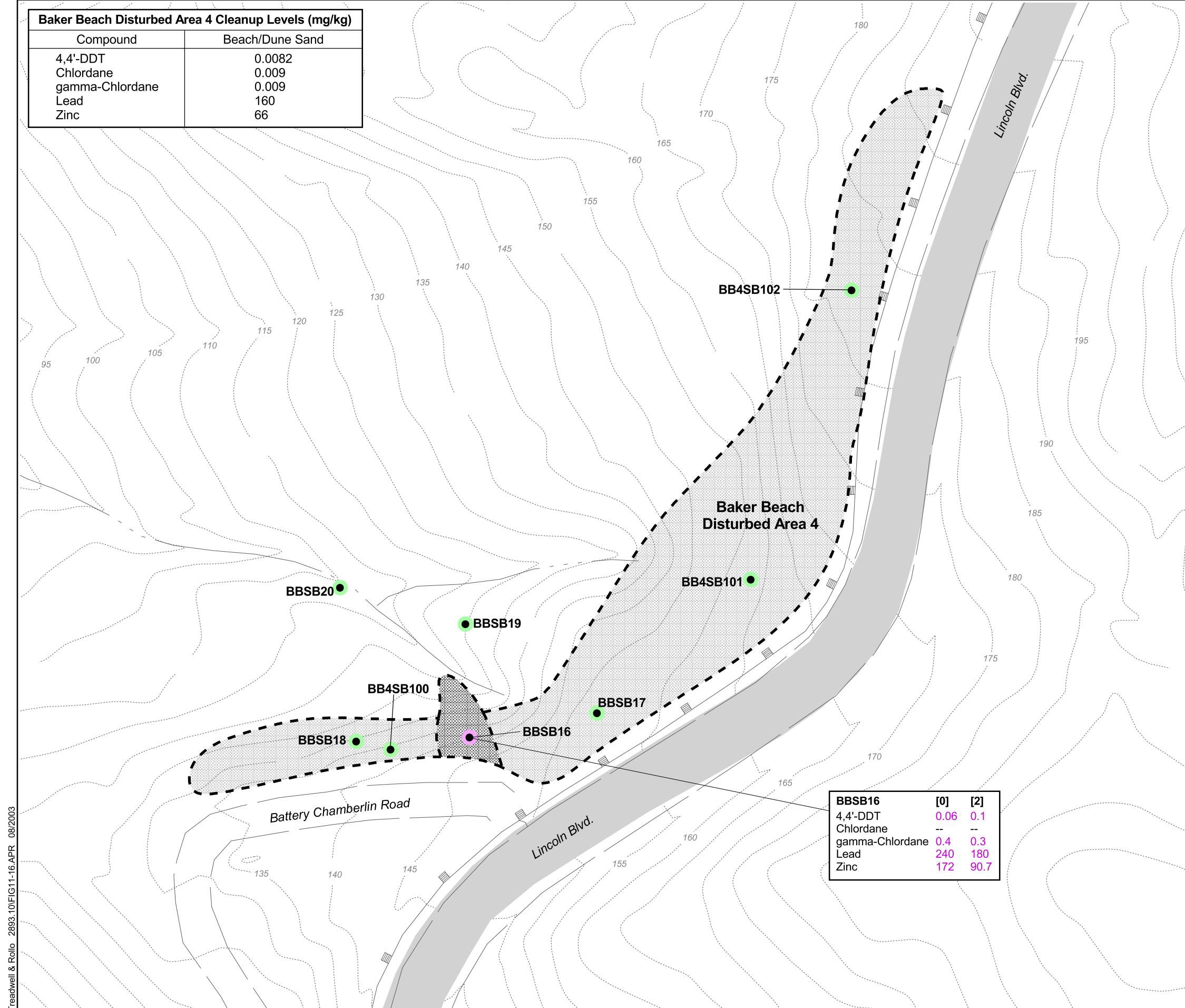
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
August 2003

FIGURE 9









N
DRAFT

50 0 50 Feet

LEGEND

- Topographic Contour (Contour Interval : 5 feet)
- Estimated Limits of Fill
- BBSB14 [2]** Sample Location [depth in feet]
- BB4SB100** Soil Boring
- Generalized Disturbed Area Believed to Have No Chemicals of Concern in Soil
- Generalized Disturbed Area Assumed to Have Chemicals of Concern in Soil (Excavation Area)

Chemicals of Concern

- Values Above Cleanup Levels
- All Values Below Cleanup Levels

Notes:
Location of limits of fill from Revised Main Installation Sites Feasibility Study (EKI, 2003).

Results reported in milligrams/kilogram (mg/kg).

Horizontal Datum: NAD 27, CA State Plane Coordinates, Zone 3, feet

Vertical Datum: Presidio Lower Low Water (ft. PLLW) (groundwater)
North American Vertical Datum, NAVD88 (topography)

Basemap was provided by Presidio Trust.

BAKER BEACH DISTURBED AREA 4 CHEMICALS OF CONCERN IN SOIL



FIGURE 13

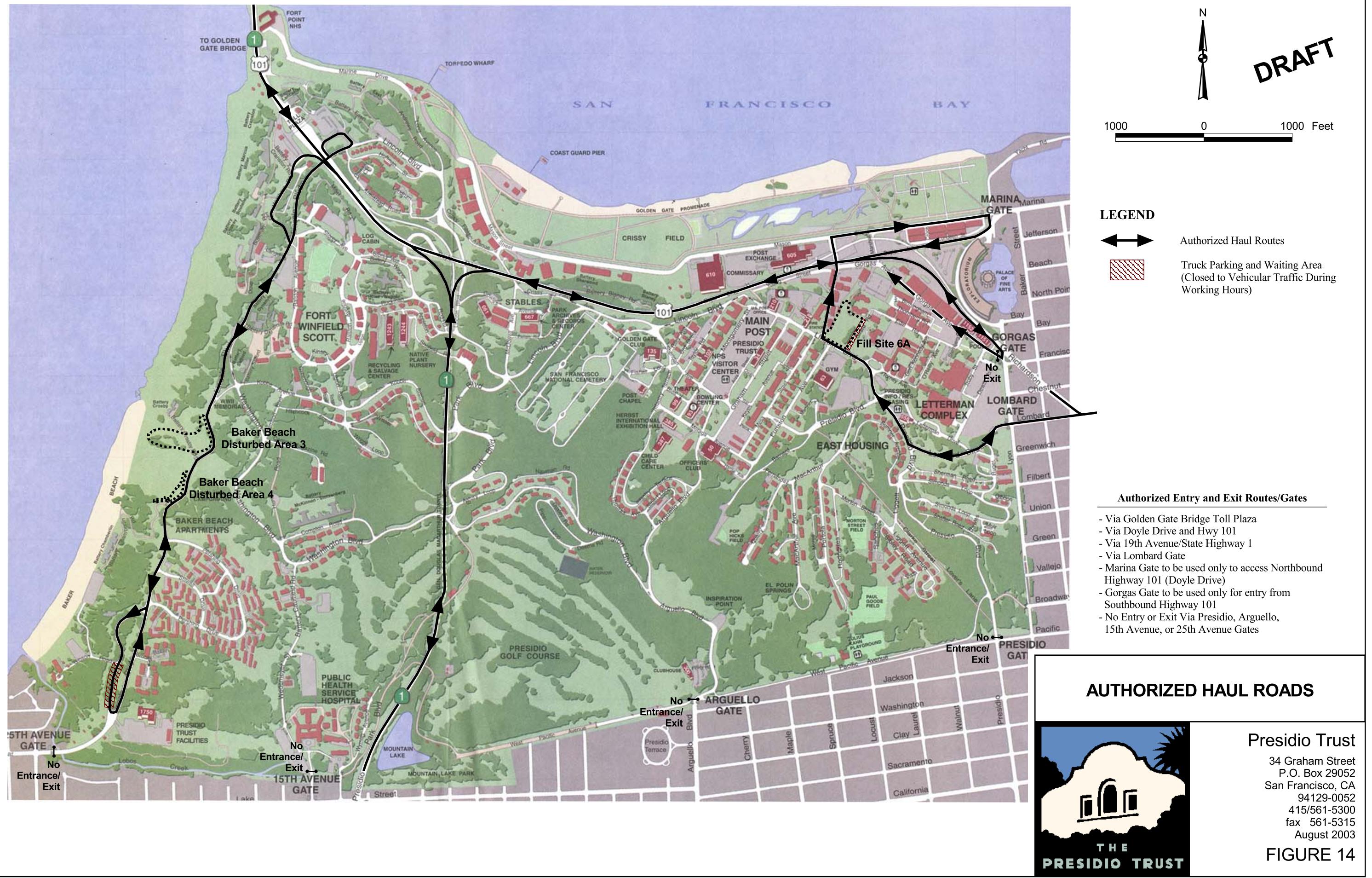
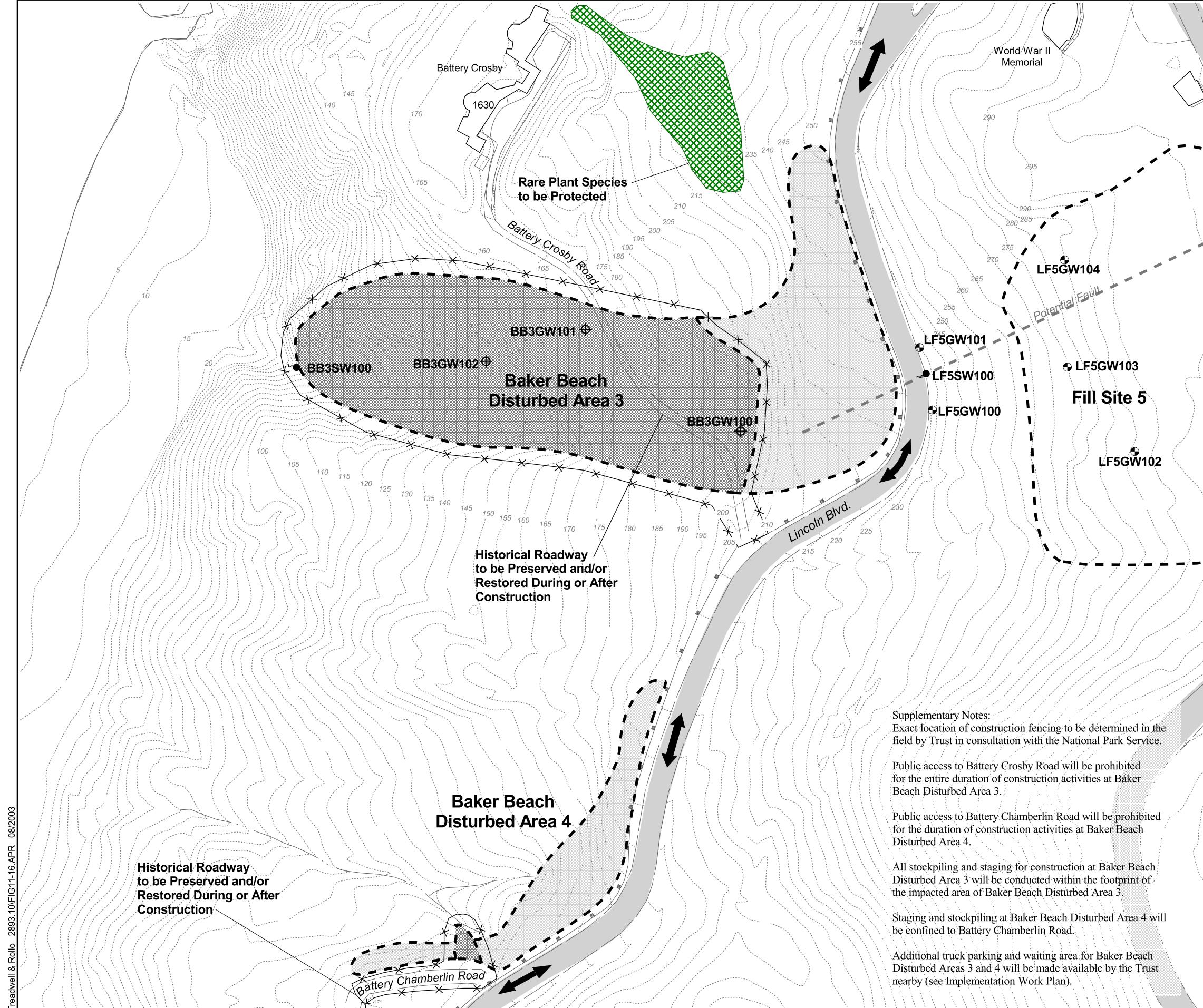


FIGURE 14



Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
August 2003

FIGURE 15



DRAFT

N
100 0 100 Feet

BAKER BEACH DISTURBED AREAS 3 AND 4 SITE VICINITY AND WORK AREAS

Presidio Trust
34 Graham Street
P.O. Box 29052
San Francisco, CA
94129-0052
415/561-5300
fax 415/561-5315
August 2003

FIGURE 16

APPENDIX A
Responsiveness Summary

(To be inserted in Final RAP)

APPENDIX B
Administrative Record List

APPENDIX B
ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

(in chronological order)

Date	Author	Recipient	Title of Document
undated	EPA	Public	40 CFR Part 761.61 Subpart D of Toxic Substances Control Act
1936	NPS Archives	Public	<i>Map of Presidio from oversize roll 37188</i>
1974	Schlocker, J.	Public	<i>Geology of the San Francisco North Quadrangle, California. United States Geological Survey Professional Paper 782. (Interim Final)</i>
08/88	U.S. Environmental Protection Agency (EPA)	Public	CERCLA Compliance with Other Laws Manual Part I Interim Final
10/88	EPA	Public	<i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA</i> , Interim Final
12/89	EPA	Public	CERCLA Compliance with other Laws Manual: Part II. Clean Air Act and other Environmental Statutes and State Requirements.
11/89	Argonne National Laboratory	U.S. Army Toxic and Hazardous Materials Agency	<i>Enhanced Preliminary Assessment Report: Presidio of San Francisco Military Reservation, San Francisco, California</i>
12/89	EPA	Public	<i>Risk Assessment Guidance for Superfund Human Health Risk Assessment</i> . U.S. EPA Region IX.
12/89	EPA	Public	<i>Risk Assessment Guidance for Superfund: Volume 1 – Human Health Evaluation Manual (Part A), Interim</i> . Office of Solid Waste and Emergency Response. EPA/540/1-89/002.

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
04/91	State Water Resources Control Board (SWRCB)	Public	<i>California Enclosed Bays and Estuaries Plan, Water Quality Control Plan for Enclosed Bays and Estuaries of California</i>
04/91	SWRCB	Public	<i>California Inland Surface Waters Plan, Water Quality Control Plan for Inland Surface Waters of California</i>
07/91	EPA	Public	<i>ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers.</i> Office of Solid Waste and Emergency Response. Publication 9234.2-01/FS-A.
08/91	Regional Water Quality Control Board (RWQCB)	Public	<i>Tri-regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites</i>
01/92	EPA	Public	40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule. Office of Emergency and Remedial Response. EPA 9200.2-14/PB92-963261
1994-present	Presidio Restoration Advisory Board (RAB)	Public	RAB Meeting Transcripts
01/94	Office of Environmental Health Hazard Assessment	Public	<i>Status Report: No Significant Risk Levels for Carcinogens and Acceptable Intake Levels for Reproductive Toxicants.</i> Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
07/94	Department of the Interior, NPS	Public	<i>Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California.</i>
06/95	RWQCB, San Francisco Bay Region	Public	<i>Water Quality Control Plan, San Francisco Bay Basin</i>
10/95	Montgomery Watson	Army	<i>Fuel Product Action Level Development Report, Presidio of San Francisco, California</i>
12/95	Department of Toxic Substances Control (DTSC)	Public	Guidance Document No. EO-95-007-PP, <i>Remedial Action Plan (RAP) Policy</i>
05/96	RWQCB, San Francisco Bay Region	Public	<i>Order No. 96-070, Site Cleanup Requirements for the Cleanup of Petroleum Impacted Soils, U.S. Army, Presidio of San Francisco, California.</i> San Francisco Bay Region.
07/96	Montgomery Watson	Army	<i>Draft Basewide Groundwater Monitoring Plan, Presidio of San Francisco, California</i>
01/97	Dames & Moore	Army	<i>Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco</i>
05/97	EPA	Public	<i>Test Methods for Evaluating Solid Waste, Volume 1B: Laboratory Manual, Physical/Chemical Methods.</i> Revision III. Office of Solid Waste and Emergency Response. SW 846.

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
12/97	International Technology Corporation (IT)	Army	<i>Report of Petroleum Hydrocarbon Bioassay and Point-of-Compliance Concentration Determinations, Saltwater Ecological Protection Zone, Presidio of San Francisco, California</i>
05/98	EPA	Public	<i>Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual, Supplemental Guidance Dermal Risk Assessment. Interim Guidance. Office of Emergency Response. NCEA-W-0364.</i>
05/98	Erler & Kalinowski, Inc. (EKI)	The Presidio Trust	<i>Alternate Remedial Actions for Presidio Main Installation Sites and Public Health Service Sites</i>
04/99	Montgomery Watson	Army	<i>Buildings 207/231 Area Groundwater Monitoring Program January 1999 Quarterly Report, Presidio of San Francisco, California</i>
05/99	The Presidio Trust and NPS	Public	<i>Memorandum of Agreement for Environmental Remediation of Presidio of San Francisco "Area A" Property</i>
05/99	United States Department of Defense, Department of the Army (Army), Presidio Trust, and NPS	Public	<i>Memorandum of Agreement Regarding Environmental Remediation at the Presidio of San Francisco</i>

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
05/99	Montgomery Watson	Army	<i>Development of Point of Compliance Concentrations (POCCs) for Gasoline in Surface Waters and Sediments of the Proposed Freshwater Stream, Presidio of San Francisco, California</i>
05/99	International Technology Corporation, Inc. (IT)	Army	<i>Fuel Distribution System Closure Report, Presidio of San Francisco, California</i>
08/99	DTSC, Presidio Trust, and NPS	Public	<i>Presidio Consent Agreement</i>
08/99	Montgomery Watson	Army	<i>Building 1065 Area Groundwater Monitoring Program April 1999 Quarterly Report, Presidio of San Francisco, California</i>
11/99	Montgomery Watson	The Presidio Trust	<i>Landfill Design Summary Report</i>
2000	SWRCB	Public	<i>Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, (Phase 1 of the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan)</i>
02/00	EPA	Public	<i>Drinking Water Standards and Health Advisories Table. Region IX, Drinking Water Office</i>
02/00	EPA	Public	<i>Institutional Controls and Transfer of Real Property under CERCLA Section 120(h)(3)(A), (B) or (C). Federal Facilities Restoration and Reuse Office</i>
07/00	EPA	Public	<i>A Guide to Development and Documenting Cost Estimates During the Feasibility Study</i>

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
10/00	EKI	The Presidio Trust	<i>Draft Sampling Results for Selected Main Installation Sites, Presidio of San Francisco, California</i>
11/00	EPA	Public	<i>Preliminary Remediation Goals (PRGs)</i>
04/01	Tetra Tech EM, Inc.	The Presidio Trust	<i>Presidio-wide Quality Assurance Project Plan, Sampling and Analyses Plan, Presidio of San Francisco, California. Revision 1.</i>
04/01	Treadwell & Rollo, Inc.	The Presidio Trust	<i>Field Sampling Plan, Presidio Groundwater Monitoring Program Project</i>
05/01	Department of the Interior, NPS and the Presidio Trust	Public	<i>Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco, Staff Report</i>
07/01	EKI	The Presidio Trust	<i>Technical Memorandum: Bivariate Scatter Plots for Soil Metals Data, Main Installation Sites, Presidio of San Francisco</i>
11/01	Presidio Trust and Golden Gate National Recreational Area	U.S. Fish and Wildlife Service, Department of the Interior	<i>Presidio of San Francisco Biological Assessment, Draft Presidio Environmental Remediation Plan</i>
12/01	RWQCB, San Francisco Bay Region	Public	<i>Application of Risk-Based Screening Levels and Decision Making to Sites with Impacted Soil and Groundwater, Interim Draft</i>
04/02	Craig Cooper, The Presidio Trust	Brian Ullensvang, NPS	<i>Details of NPS/Trust ARARs Resolution (letter)</i>
05/02	The Presidio Trust	Public	<i>Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco, California</i>

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
07/02	U.S. Department of the Interior, Fish and Wildlife Service	The Presidio Trust and Golden Gate National Recreational Area	<i>Biological Opinion Letter, Presidio of San Francisco</i>
10/02	EKI	The Presidio Trust	<i>Development of Presidio-wide Cleanup Levels for Soil, Sediment, Groundwater and Surface Water</i>
11/02	Treadwell & Rollo, Inc.	The Presidio Trust	<i>Memorandum to Craig Cooper of the Trust Regarding Slope Stability at Baker Beach Disturbed Area 3</i>
02/03	MACTEC Engineering and Consulting, Inc.	The Presidio Trust	<i>Draft Interim Data Report, Building 1065 Area, Presidio of San Francisco, California</i>
03/03	EKI	The Presidio Trust	<i>Revised Final Feasibility Study Report for Main Installation Sites</i>
03/03	Treadwell & Rollo, Inc.	The Presidio Trust	<i>Quarterly Groundwater Monitoring Annual Summary Report for the Fourth Quarter 2002, Presidio-wide Groundwater Monitoring Program, Presidio of San Francisco</i>
04/03	MACTEC Engineering and Consulting, Inc.	The Presidio Trust	<i>Draft Data Gaps Investigation Work Plan for Building 207/231, Presidio of San Francisco, California</i>
04/03	Department of the Interior, NPS and the Presidio Trust	Public	<i>U.S. Army Corps of Engineers Potential Jurisdictional Wetlands and U.S. Fish and Wildlife Habitat on the Presidio of San Francisco</i>
02/03	MACTEC Engineering and Consulting, Inc.	The Presidio Trust	<i>Draft Interim Data Report Building 1065 Area, Presidio of San Francisco, San Francisco, California</i>

ADMINISTRATIVE RECORD LIST
REMEDIAL ACTION PLAN
FILL SITE 6A AND BAKER BEACH DISTURBED AREAS 3 AND 4

Date	Author	Recipient	Title of Document
08/03	John Fossen and Jim Kelly, The Presidio Trust	Craig Cooper, The Presidio Trust	Investigation of Presidio Storm Sewer Network within Tennessee Hollow Drainage Basin, Presidio of San Francisco

APPENDIX C
CEQA Documentation

Development Type:

<input type="checkbox"/> Residential:	Units: _____	Acres: _____	<input type="checkbox"/> Water Facilities:	Type: _____	MGD: _____
<input type="checkbox"/> Office:	Sq ft.: _____	Acres: _____	Employees: _____	<input type="checkbox"/> Transportation:	Type: _____
<input type="checkbox"/> Commercial:	Sq ft.: _____	Acres: _____	Employees: _____	<input type="checkbox"/> Mining:	Mineral: _____
<input type="checkbox"/> Industrial:	Sq ft.: _____	Acres: _____	Employees: _____	<input type="checkbox"/> Power:	Type: _____ Watts: _____
<input type="checkbox"/> Educational:				<input type="checkbox"/> Waste Treatment:	Type: _____
<input type="checkbox"/> Recreational:				<input type="checkbox"/> Hazardous Waste:	Type: _____ (acids, bases, solvents, etc.)
<input checked="" type="checkbox"/> Other:	Contaminated Site Cleanup				

Project Issues Discussed in Document:

<input checked="" type="checkbox"/> Aesthetic/Visual	<input type="checkbox"/> Flood Plain/Flooding	<input type="checkbox"/> Schools/Universities	<input checked="" type="checkbox"/> Water Quality
<input type="checkbox"/> Agricultural Land	<input type="checkbox"/> Forest Land/Fire Hazard	<input type="checkbox"/> Septic Systems	<input checked="" type="checkbox"/> Water Supply/Groundwater
<input checked="" type="checkbox"/> Air Quality	<input type="checkbox"/> Geologic/Seismic	<input type="checkbox"/> Sewer Capacity	<input checked="" type="checkbox"/> Wetland/Riparian
<input checked="" type="checkbox"/> Noise	<input type="checkbox"/> Minerals	<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Archeological/Historical
<input checked="" type="checkbox"/> Coastal Zone	<input type="checkbox"/> Solid Waste	<input type="checkbox"/> Growth Inducing	<input type="checkbox"/> Population/Housing Balance
<input type="checkbox"/> Drainage/Absorption	<input checked="" type="checkbox"/> Toxic/Hazardous	<input checked="" type="checkbox"/> Landuse	<input checked="" type="checkbox"/> Soil Erosion/Compaction/Grading
<input type="checkbox"/> Economic/Jobs	<input type="checkbox"/> Public Services/Facilities	<input type="checkbox"/> Traffic/Circulation	<input type="checkbox"/> Cumulative Effects
<input type="checkbox"/> Fiscal	<input checked="" type="checkbox"/> Recreation/Parks	<input checked="" type="checkbox"/> Vegetation	<input type="checkbox"/> Other:

Present Land Use/Zoning/General Plan Use:

Presidio of San Francisco, National Park

Project Description:

The proposed project consists of the proposed approval of a Remedial Action Plan (RAP) by the Department of Toxic Substances Control (DTSC) to address contamination above site cleanup levels at FS 6A and BBDA 3 and 4. The RAP for these three sites proposes "clean closure" consisting of excavation of contaminated soil and debris, recycling of non-contaminated materials to the extent practicable, and off-site disposal of contaminated materials. With respect to FS 6A, the impacted area consists of 33,000 cubic yards of material to be removed. At BBDA 3 and 4, approximately 32,000 and 180 cubic yards of contaminated material, respectively are to be removed under the RAP.

The proposed excavation work at the three sites is anticipated to take approximately 14 to 24 weeks to complete if conducted consecutively. Groundwater monitoring at FS 6A and BBDA 3 will be ongoing for approximately 3 years thereafter. Upon completion of the excavation work, the sites will be re-vegetated in accordance with the Presidio Vegetation Management Plan.

The remedial actions required by the RAP may be performed at the two work areas (e.g. BBDA 3 and 4 as one work area and FS 6A as another work area) simultaneously or sequentially. The time schedule for completing the remedial activities for each work area is outlined below and incorporates both schedule scenarios. If the work is preformed sequentially, the remedial action would begin at the BBDA3 and 4 work area and immediately be followed by the remedial action at FS 6A.

Signature of Lead Agency Representative

May 22, 2003
DateDaniel E. Murphy, P.E.
Representative's NameChief, Berkeley Unit
Representative's Title(510) 540-3772
Phone #

* NOTE: Clearinghouse will assign identification numbers for all new projects. If SCH number already exists for a project (e.g., from a Notice of Preparation or previous draft document) please enter the SCH number in the box located in upper right corner of this document.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

NOTICE OF COMPLETION, PAGE 2

Reviewing Agencies:

<input checked="" type="checkbox"/> Resources Agency	<input type="checkbox"/> Caltrans District
<input checked="" type="checkbox"/> Boating / Waterways	<input type="checkbox"/> Department of Transportation Planning
<input checked="" type="checkbox"/> Conservation	<input type="checkbox"/> Aeronautics
<input checked="" type="checkbox"/> Fish and Game	<input type="checkbox"/> California Highway Patrol
<input type="checkbox"/> Forestry	<input type="checkbox"/> Housing and Community Development
<input type="checkbox"/> Colorado River Board	<input type="checkbox"/> Statewide Health Planning
<input checked="" type="checkbox"/> Department of Water Resources	<input type="checkbox"/> Health
<input type="checkbox"/> Reclamation	<input type="checkbox"/> Food and Agriculture
<input checked="" type="checkbox"/> Parks and Recreation	<input type="checkbox"/> Public Utilities Commission
<input checked="" type="checkbox"/> Office of Historic Preservation	<input type="checkbox"/> Public Works
<input checked="" type="checkbox"/> Native American Heritage Commission	<input type="checkbox"/> Corrections
<input checked="" type="checkbox"/> SF Bay Conservation and Development Commission	<input type="checkbox"/> General Services
<input checked="" type="checkbox"/> Coastal Commission	<input type="checkbox"/> OLA
<input type="checkbox"/> Energy Commission	<input type="checkbox"/> Santa Monica Mountains
<input type="checkbox"/> State Lands Commission	<input type="checkbox"/> TRPA
<input type="checkbox"/> Air Resources Board	<input type="checkbox"/> OPR – OLGA
<input type="checkbox"/> Solid Waste Management Board	<input checked="" type="checkbox"/> OPR – Coastal
<input type="checkbox"/> State Water Resources Control Board: Region #	<input type="checkbox"/> Bureau of Land Management
<input checked="" type="checkbox"/> Regional Water Resources Control Board: Region #	<input checked="" type="checkbox"/> Forest Service
<input type="checkbox"/> Water Rights	<input checked="" type="checkbox"/> Other: U.S. Fish and Wildlife
<input checked="" type="checkbox"/> Water Quality	<input type="checkbox"/> Other:

FOR SCH USE ONLY

Date Received at SCH:	Applicant:
Date Review Starts:	Consultant:
Date to Agencies:	Contact Phone #: ()
Clearance Date: Notes:	Address:

CALIFORNIA ENVIRONMENTAL QUALITY ACT**DRAFT
MITIGATED NEGATIVE DECLARATION**

Project Title: REMEDIAL ACTION PLAN FOR FILL SITE 6A (FS 6A) AND BAKER BEACH DISTURBED AREA (BBDA) 3 AND 4, PRESIDIO OF SAN FRANCISCO, SAN FRANCISCO, CALIFORNIA.

State Clearinghouse Number:

Contact Person and Telephone #: Robert M. Boggs, Jr., P.E.
Department of Toxics Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721
(510) 540-3751
Rboggs@DTSC.ca.gov

Project Location (include County): Presidio of San Francisco
San Francisco County
State of California

Project Description:

The proposed project consists of the proposed approval of a *Remedial Action Plan (RAP)* by the Department of Toxic Substances Control (DTSC) to address contamination above site cleanup levels at FS 6A and BBDA 3 and 4. The RAP for these three sites proposes “clean closure” consisting of excavation of contaminated soil and debris, recycling of non-contaminated materials to the extent practicable, and off-site disposal of contaminated materials. With respect to FS 6A, the impacted area consists of 33,000 cubic yards of material to be removed. At BBDA 3 and 4, approximately 32,000 and 180 cubic yards of contaminated material, respectively are to be removed under the RAP.

The proposed excavation work at the three sites is anticipated to take approximately 14 to 24 weeks to complete if conducted consecutively. Groundwater monitoring at FS 6A and BBDA 3 will be ongoing for approximately 3 years thereafter. Upon completion of the excavation work, the sites will be re-vegetated in accordance with the Presidio Vegetation Management Plan.

The remedial actions required by the RAP may be performed at the two work areas (e.g. BBDA 3 and 4 as one work area and FS 6A as another work area) simultaneously or sequentially. The time schedule for completing the remedial activities for each work area is outlined below and incorporates both schedule scenarios. If the work is preformed sequentially, the remedial action would begin at the BBDA3 and 4 work area and immediately be followed by the remedial action at FS 6A.

Findings of Significant Effect on Environment:

After conducting an Initial Study of the potential environmental impacts of the proposed project, DTSC has determined that implementation of the project will not result in any significant environmental impacts. See attached Initial Study.

Mitigation Measures:

DTSC has determined that mitigation measures will be required in order to assure that potential impacts from the project are less than significant. Mitigation monitoring and measures may be required to protect biological resources near all three sites, to protect cultural resources at FS6A, and to protect soils and geology at BBDA3 and FS6A.

DTSC Project Manager Signature	Title	Telephone #	Date
---------------------------------------	--------------	--------------------	-------------

DTSC Branch/ Unit Chief Signature	Title	Telephone #	Date
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CALIFORNIA ENVIRONMENTAL QUALITY ACT

INITIAL STUDY

The Department of Toxic Substances Control (DTSC) has completed the following Initial Study for this project in accordance with the California Environmental Quality Act (§ 21000 et seq., California Public Resources Code) and implementing Guidelines (§15000 et seq., Title 14, California Code of Regulations).

I. PROJECT INFORMATION

Project Name: REMEDIAL ACTION PLAN FOR FILL SITE 6A (FS 6A) AND BAKER BEACH DISTURBED AREA (BBDA) 3 AND 4, PRESIDIO OF SAN FRANCISCO, SAN FRANCISCO, CALIFORNIA.

Site Location: All three sites are located within the Presidio of San Francisco, California (See Figure 1).
FS 6A – In the Main Post area, bounded by Lincoln Boulevard to the south, Buildings 222 through 224 on Halleck Street to the west, Girard Road to the east, and a sidewalk between Girard and Halleck (near Building 1030) to the north.
BBDA 3 – In the Coastal Bluffs area, bounded by Lincoln Boulevard to the east and Baker Beach to the west, immediately west of Fill Site 5. Battery Crosby Road bisects the site.
BBDA 4 – In the Coastal Bluffs area, immediately west of Lincoln Boulevard at the intersection of Battery Chamberlain Road.

Lead Agency Contact Person/ Address/

Phone Number:

Robert M. Boggs, Jr., P.E.
Department of Toxics Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721
(510) 540-3751
Rboggs@DTSC.ca.gov

Project Proponent Contact Person/Address

Phone Number:

George Ford, R.G., Remedial Construction Manager
Presidio Trust
1750 Lincoln Boulevard
Post Office Box 29052
San Francisco, CA 94129-0052
(415) 561-4292

Project Description:

Background Information: This project is a Remedial Action Plan (RAP) for cleanup of three areas within the Presidio of San Francisco (Presidio). The Presidio occupies 1,480 acres at the northern tip of the San Francisco peninsula and is bounded on the north by San Francisco Bay and on the west by the Pacific Ocean, with densely populated residential areas to the south and east. From 1848 through 1994, the Presidio was an U.S. Army (Army) installation. Industrial operations formerly performed at the Presidio were associated with maintenance and repair of vehicles, aircraft, and base facilities. On October 1, 1994 the Presidio was transferred to the National Park Service (NPS) and became part of the Golden Gate National Recreation Area (GGNRA). In 1998, the Presidio Trust (Trust), a single-purpose federal agency, was granted jurisdiction over 1,168 acres of the Presidio, and the NPS has jurisdiction over 312 acres of the Presidio. FS6A is located within Trust jurisdiction and BBDA 3 and BBDA 4 within the NPS

jurisdictional area. The Presidio Trust has the authority and responsibility to manage the remediation of contamination throughout the Presidio, in both Trust and NPS jurisdictional areas.

Site Location, Physical Setting, and History. The location of the sites is shown in Figure 1. A brief description of the physical setting and history for each site is described below.

- Fill Site 6A. Fill Site 6A is located at the northeast corner of the Main Post area of the Presidio, west of the Letterman Complex, and has been part of the developed portion of the Presidio since the early 20th century. FS 6A is approximately 1.2 acres in size and contains contaminated soil, debris, and former building foundations. The site currently consists of an open, relatively flat grassy field with a small group of redwood trees in its center. Several residential and office buildings surround FS 6A. Historical maps obtained from the NPS archives indicate that a box culvert and two railroad spurs traversed the FS 6A area from north to south between four previously existing buildings that appear to have been former Army warehouses. The native soils underlying the landfill are clayey or silty sand to well-sorted sand with minor clay layers of the Colma Formation. The Franciscan Formation is estimated to be about 175 feet below ground surface (bgs) in this area. The groundwater level at FS 6A is approximately 6 to 22 feet below the current ground surface
- Baker Beach Disturbed Areas 3 and 4. These two sites are located on the west side of the Presidio on the coastal bluffs overlooking Baker Beach and the Pacific Ocean. BBDA 3 and 4 consist of earthen fill placed during the construction of Lincoln Boulevard, as well as additional fill material dumped west of Battery Crosby Road, just off of Lincoln Boulevard. The material in BBDA 3 is composed primarily of artificial fill and debris fill containing concrete, asphalt, and metal parts. BBDA 3 received fill material intermittently between 1948 and 1973. The material at BBDA 4 is composed primarily of artificial fill and some debris fill that was placed by 1955. The northern portion of BBDA 3 is predominantly Franciscan Formation overlain by slope deposits consisting of unstratified mixtures of bedrock fragments, sand, silt, and clay with small areas serpentine rock formation. The southern portion is covered almost entirely by Quaternary dune sand. BBDA 4 is covered entirely by Quaternary dune sand. Depth to groundwater at BBDA 3 and 4 has not been ascertained. A freshwater seep is located at the western boundary of BBDA 3.

Contaminants of Concern (COCs). The contaminants of concern (COCs) and cleanup levels differ between the three sites according to the background lithologies, the current or future existence of freshwater surface water or seeps, and planned land uses. The COCs in soil at FS 6A are PCB 1260 and mercury. Zinc and cadmium have been retained as potential soil COCs at FS 6A. The COCs in soil at BBDA 3 include cadmium, cobalt, lead, zinc, DDT, chlordane (including alpha and gamma chlordane), dieldrin, and PCB-1254. The COCs in soil at BBDA 4 include lead, zinc, DDT, chlordane and gamma-chlordane. Selenium is the only COC in groundwater at FS 6A. However, the recommended remedy for FS 6A will include the installation of three new wells to be sampled for metals. The groundwater at BBDA 3 and 4 has not been characterized to date and the surface water seep at BBDA 3 flows infrequently and has been sampled once with no detections above cleanup levels. Although there are no COCs in groundwater at BBDA 3, the recommended remedy for BBDA 3 includes the installation of three new wells. These wells and the freshwater seep at BBDA 3 will be sampled and analyzed for metals and total petroleum hydrocarbons. Freshwater seeps are not present at BBDA 4 and soil analytical results indicate that impacts to groundwater are unlikely.

The Proposed Remedial Action Plan. The proposed project consists of a *Remedial Action Plan (RAP)* to address contamination above site cleanup levels at FS 6A and BBDA 3 and 4. The RAP for these three sites proposes “clean closure” consisting of excavation of contaminated soil and debris, recycling of non-contaminated materials to the extent practicable, and off-site disposal of contaminated materials. The planned landuse for BBDA 3 and 4 is specified in the National Park Service (NPS) *General Management Plan Amendment* (GMPA) (NPS, 1994). Landuse for FS 6A is specified in the *Presidio Trust Management Plan* (PTMP) (Presidio Trust, 2002). Per the GMPA, land use at BBDA 3 and 4 is designated as open space recreational land use (including protection of special status species) and revegetation in accordance with the *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco* (VMP) (Presidio Trust and NPS, 2001). Per PTMP, FS 6A has a planned land

use of residential (including a zone to protect special status species and an ecological buffer zone) and revegetation in accordance with the VMP. With respect to FS 6A, the impacted area consists of 33,000 cubic yards of material to be removed. At BBDA 3 and 4, approximately 32,000 and 180 cubic yards of contaminated material, respectively are to be removed under the RAP.

Implementation of the RAP will consist of the following tasks for each site:

- Contractor Mobilization.

The construction contractor will mobilize its workers and equipment to the site. Staging areas will be created, including areas for material stockpiling and decontamination areas which will be located at or near each site. Site security measures will also be installed.

- Clearing and Grubbing.

The sites will be cleared of any obstructions and un-needed items. Existing vegetation will be grubbed and removed. A few trees at BBDA 3 will be removed. Some trees at FS 6A will be removed but, to the extent practicable, the group of redwood trees in the center of the site will be preserved. No trees will be removed at BBDA 4.

- Excavation of Refuse/Fill and Contaminated Soil; Recycling of Uncontaminated Materials to the Extent Practicable and Off-site Disposal of Contaminated Materials.

Using backhoes and other heavy equipment, the impacted contents of FS 6A, BBDA 3 and BBDA 4 will be excavated and stockpiled on-site. The estimated volume to be excavated is 33,000 cubic yards at FS 6A and 32,000 and 180 cubic yards at BBDA 3 and 4, respectively. Materials eligible for recycling are those that are found to be non-contaminated and would include most construction debris (e.g., concrete, masonry, metal), and possibly some vegetative material. Assumptions regarding the recycling of various waste types may be modified in the field, depending on the quantity and nature of the materials recovered. At FS 6A and BBDA 3, it is anticipated that by removing the fill and contaminated soils, the underlying native ground surface will be exposed and subsequently restored. The underlying ground surface at FS 6A is expected to be a gentle slope, consisting mostly of sands and clays of the Colma Formation. In the case of BBDA 3, the exposed native ground surface west of Battery Crosby Road is anticipated to be a steep ravine consisting largely of dune sand, Colma Formation and possibly some serpentinite bedrock of the Franciscan Formation. Regrading of these native soil formations at FS 6A and BBDA 3 will be performed only for specific, limited purposes, such as providing for adequate surface water runoff and drainage. No backfill is anticipated at FS 6A and BBDA 3 and less than 200 cubic yards of backfill soils is anticipated to be imported and used at BBDA 4. The backfill soils at BBDA 4 must meet applicable soil cleanup levels. At BBDA 4, no native material is expected to be exposed. The remaining fill material at BBDA 4 will be regraded to maintain slope stability.

- Transportation and Off-Site Disposal.

Contaminated materials will be loaded onto trucks for transport and disposal in an appropriate off-site landfill. The estimated volume to be transported off-site for disposal is 33,000 cubic yards from FS 6A and 32,000 and 180 cubic yards from BBDA 3 and 4, respectively.

- Confirmation Soil Sampling.

In accordance with the RAP, confirmation soil samples at the limits of the excavations will be taken and analyzed at an analytical laboratory. Excavations will be considered complete when confirmation sampling confirms that site-specific cleanup levels have been achieved.

- Install Surface Drainage and Erosion Control Appurtenances (if necessary).

The excavations will be graded where appropriate. Surface drainage and erosion control features will be installed at each site as appropriate in accordance with site-specific Storm Water Pollution Prevention Plans.

- Site Revegetation and Vegetation Maintenance.

All three sites will be revegetated in accordance with the Presidio VMP with native plants appropriate for each site.

- Install New Monitoring Wells.

Three new groundwater monitoring wells will be installed at both FS 6A and BBDA 3 as required by the RAP. An existing monitoring well will be abandoned at FS 6A.

- Post-Closure Monitoring and Maintenance.

Groundwater at FS 6A and groundwater and surface water seeps at BBDA 3 will be monitored in accordance with the RAP for approximately 3 years to ensure that groundwater is not adversely affected.

The proposed excavation work at the three sites is anticipated to take approximately 14 to 24 weeks to complete if conducted consecutively. Groundwater monitoring at FS 6A and BBDA 3 will be ongoing for approximately 3 years thereafter. Upon completion of the excavation work, the sites will be revegetated in accordance with the Presidio VMP.

Schedule: The remedial actions required by the RAP may be performed at the two work areas (e.g. BBDA 3 and 4 as one work area and FS 6A as another work area) simultaneously or sequentially. The time schedule for completing the remedial activities for each work area is outlined below and incorporates both schedule scenarios. If the work is preformed sequentially, the remedial action would begin at the BBDA3 and 4 work area and immediately be followed by the remedial action at FS 6A.

Task	Duration if performed sequentially	Duration if performed simultaneously
Contractor Mobilization first work area; Creation of Staging, Stockpiling, and Decontamination Areas; Installation of Site Security Measures	1 week	1 weeks
Clearing and Grubbing of first work area	1 week	2 weeks
Excavation of Refuse/Fill and Contaminated Soil at first work area; Recycling of Uncontaminated materials and/or Off-site Disposal of Contaminated Materials	6-8 weeks	8-10 weeks
Contractor Mobilization to second work area; Creation of Staging, Stockpiling, and Decontamination Areas; Installation of Site Security Measures	1 week	N/A
Clearing and Grubbing of Site of second work area	1 week	N/A
Excavation of Refuse/Fill and Contaminated Soil at second work area; Recycling of Uncontaminated materials and/or Off-site Disposal of Contaminated Materials	6-8 weeks	N/A
Confirmation Soil Sampling at all Sites	(concurrent)	(concurrent)
Install Surface Drainage and Erosion Control Appurtenances at all Sites	1 - 2 weeks	1-2 weeks
Install New Monitoring Wells	2 weeks	2 weeks

TOTAL DURATION OF REMEDIAL ACTIONS	19-24 weeks	14-17 weeks
Site Revegetation and Vegetation Maintenance	(ongoing thereafter)	
Post-Closure Monitoring and Maintenance - Total Duration	3+ years	3+ years

Agencies Having Jurisdiction Over the Project/ Types of Permits Required:

- California Department of Toxic Substances Control (DTSC) – Lead Agency for CEQA Initial Study, concurs on Remedial Action Plan and tracks hazardous waste manifests.
- Bay Area Air Quality Management District - applicable regulations, no permit required; approval of Asbestos Dust Mitigation Plan for BBDA 3 required.
- California Occupational Safety and Health Administration – applicable regulations, no permit required.
- San Francisco Bay Regional Water Quality Control Board – concurs on Remedial Action Plan and Storm Water Pollution Prevention Plans (SWPPPs) for each of the three sites.
- City of San Francisco – sewer discharge permit for any dewatering required and for groundwater sampling purge water.
- National Park Service – concurs with remedy selection for BBDA 3 and 4.
- Presidio Trust – excavation permits, approval of work hours and traffic routes.
- Environmental Protection Agency – hazardous waste manifests.

II. DISCRETIONARY APPROVAL ACTION BEING CONSIDERED BY DTSC

<input type="checkbox"/> Initial Permit Issuance	<input type="checkbox"/> Removal Action Plan
<input type="checkbox"/> Permit Renewal	<input type="checkbox"/> Removal Action Workplan
<input type="checkbox"/> Permit Modification	<input type="checkbox"/> Interim Removal
<input type="checkbox"/> Closure Plan	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Regulations	<input checked="" type="checkbox"/> Remedial Action Plan

Program/ Region Approving Project:

Office of Military Facilities
 California Department of Toxic Substance Control
 700 Heinz Avenue, Suite 200
 Berkeley, CA 94710-2721

III. ENVIRONMENTAL RESOURCES POTENTIALLY AFFECTED

The boxes checked below identify environmental resources which were found in the following ENVIRONMENTAL SETTING/IMPACT ANALYSIS section to be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact".

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Hazards and Hazardous Materials	<input type="checkbox"/> Population and Housing
<input type="checkbox"/> Agricultural Resources	<input type="checkbox"/> Hydrology and Water Quality	<input type="checkbox"/> Public Services
<input type="checkbox"/> Air Quality		<input type="checkbox"/> Recreation

<input type="checkbox"/> Biological Resources	<input type="checkbox"/> Land Use and Planning	<input type="checkbox"/> Transportation and Traffic
<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Utilities and Service Systems
<input type="checkbox"/> Geology And Soils	<input type="checkbox"/> Noise	

IV. ENVIRONMENTAL IMPACT ANALYSIS

The following pages provide a brief description of the physical environmental resources that exist within the area affected by the proposed project and an analysis of whether or not those resources will be potentially impacted by the proposed project. Preparation of this section follows guidance provided in DTSC's *California Environmental Quality Act Initial Study Workbook* (Workbook). A list of references used to support the following discussion and analysis are contained in Attachment A and are referenced within each section below.

1. Aesthetics

Project activities likely to create an impact: Temporary construction activities, including excavation, stockpiling, and transport of soils and debris. Re-grading, removal and replacement of vegetation, and restoration of natural areas.

Description of Environmental Setting: FS 6A is located within a developed portion of the Presidio (Main Post and Letterman Complex). FS 6A is relatively flat with a cover consisting of a grassy field with a small group of redwood trees. The western portions of BBDA 3 and FS 6A are former disposal sites in the Presidio. BBDA 3 and 4 are located within the coastal bluffs.

Analysis of Potential Impacts: The remedial actions planned for FS 6A and BBDA 3 and 4 will not adversely affect a scenic vista or damage scenic resources on a long-term basis because the excavated areas will be revegetated. Some remedial activities, including the short-term (6-8 weeks) on-site stockpiling of the excavated materials at FS 6A and BBDA 3 will be visible from Lincoln Boulevard, and all of the work at BBDA 3 and 4 will occur in a scenic area, where views of the Pacific Ocean are available to hikers, bikers, and motorists. Visual changes at these sites, including stockpiling of soils, would not be considered significant, however, due to their limited scope and temporary nature. In the long-term, the visual character and quality of the three disposal sites will be improved because impacted fill and surface debris will be removed and vegetation will be restored. Portions of FS 6A will be restored as a natural riparian corridor. The remedial activities are not expected to produce new sources of light or glare that adversely affect day or nighttime views, since all construction activities will occur during daylight hours.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco*. May.

Presidio Trust, 2002a. *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco*. May.

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4.* (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California.* July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

2. Agricultural Resources

Project activities likely to create an impact: None.

Description of Environmental Setting: The Presidio of San Francisco is a National Historic Landmark characterized by coastal bluffs, the Lobos Creek Valley, Crissy Field, community and administrative facilities, residential and commercial structures and a golf course. There are no farmlands within the Presidio.

Analysis of Potential Impacts: FS 6A and BBDAs 3 and 4 are not farmlands. Because no farmlands exist; the remedial activities and revegetation will have no agricultural impact.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A.* (in preparation).

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco.* May.

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement.* May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4.* June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4.* (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California.* July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

3. Air Quality

Project activities likely to create an impact: Excavation and off-site transport of contaminated soil.

Description of Environmental Setting: FS 6A and BBDA 3 and 4 are sites within Presidio areas characterized by coastal bluffs and developed areas, respectively. The Presidio is located within the San Francisco Bay Area Air Basin that is governed by the Bay Area Air Quality Management District (BAAQMD). The nine-county Bay Area Air Basin has a history of recorded violations of federal and state ambient air quality violations of federal and state ambient air quality standards for ozone, carbon monoxide, and inhalable particulate matter less than 10 microns in diameter (PM10). The attainment status for fine particulate matter less than 2.5 microns in diameter (PM-2.5) is unknown but will be determined in the coming years. The U.S. EPA has classified the Bay Area a moderate nonattainment area for ozone, and a maintenance area for carbon monoxide until at least 2008 (40 CFR 81.305). The California Air Resources Board has given the Bay Area State-level nonattainment status for ozone and PM10. Air circulation in the vicinity of FS 6A is very good, as the site is within 2,000 feet of San Francisco Bay. Air circulation in the vicinity of BBDA 3 and 4 is also very good, as the two sites are within 800 feet or less of the Pacific Ocean coastline.

The nearest residential buildings to FS 6A are Buildings 1030 and 1029, located immediately north of FS 6A. There are currently no sensitive receptors (e.g., schools, hospitals, or significant groups of residences) in the area within 1,000 feet of BBDA 3 and 4. The Public Health Services Hospital, now closed and inactive, is more than 2,500 feet from FS 6A and BBDA 3 and 4.

Analysis of Potential Impacts: Excavation, on-site stockpiling, and off-site transport activities will not conflict with applicable air quality plans and or regulations. During the remedial actions, dust may be emitted from open excavations, soil stockpiles, and vehicles transporting excavated materials. Dust control methods will include tarping of stockpiled soils, covering of transported materials, and watering exposed areas if visible emissions occur. Construction equipment will be maintained and operated in a manner to minimize particulate emissions. The BAAQMD reports that use of these types of management practices are effective at reducing particulate emissions to levels that are considered less than significant. If asbestos or native serpentinite (which may contain asbestos) is encountered, the materials will be handled in accordance with the site-specific Health and Safety Plan, all applicable laws and regulations, as well as applicable requirements contained in the Final Asbestos Operation and Maintenance Program, The Presidio of San Francisco (Hygienetics Environmental Services, Inc., 2000). The BAAQMD will review and approve an Asbestos Dust Mitigation Plan for BBDA 3.

Excavation equipment and trucks will be used to implement the project, resulting in vehicular emissions for the duration of activities at each site. The BAAQMD does not require a detailed air quality analysis for projects generating less than 2,000 vehicle trips per day, and thus considers associated emissions to be less than significant. An estimated total of 65,000 cubic yards of fill and soil will be removed from the three disposal sites. Using the worst case scenario of a simultaneous work schedule (see Section I, Schedule), the excavation portion of the remediation is expected to require between 8 and 10 weeks equating to approximately 40 to 50 working days when haul trucks will be used. At 16 cubic yards per truckload, approximately 8,125 vehicle trips will be required, or approximately 160 to 200 vehicle trips per day. Thus, a detailed air quality analysis is not required and vehicular emissions would be considered less than significant. It should also be noted that it is likely that the sequential schedule will be utilized and therefore truck traffic per day would be reduced to approximately 100 to 135 vehicle trips per day.

Remediation activities are not expected to release landfill gases at hazardous levels, considering the age and composition of the wastes. The site health and safety plan will provide for the monitoring of landfill gases conceivably encountered (e.g., methane, VOCs, and hydrogen sulfide) and the measures to be taken if the gases exceed hazard thresholds. In addition, the proposed work is not expected to significantly impact ozone levels.

The remedial actions likely will produce no objectionable odors. Airborne particles that potentially carry odor will be minimized by the dust abatement measures. Release of odorous substances and landfill gases is unexpected as municipal wastes constitute only a small fraction of the fill material. The project activities will not involve new asphalt paving except for incidental repairs to existing paving, and thus will not result in noticeable odors or significant emissions of reactive organic gases (ROG).

References:

Bay Area Air Quality Management District, Planning and Research Division, 1996, *CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans*. April.

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Hygienetics Environmental Services, Inc., 2000. *Final Asbestos Operation and Maintenance Program, The Presidio of San Francisco*. May.

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement*. May.

State of California Air Resource Board, 2001. Resolution 01-28. July.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

4. Biological Resources

Project activities likely to create an impact: Removal of vegetation, excavation and off-site transport of contaminated soil; re-grading with clean, native soils; importing and backfilling BBDA 4 with clean soils, and re-vegetation in accordance with the adopted Presidio Vegetation Management Plan (VMP); restoration of a segment of the Tennessee Hollow riparian corridor.

Description of Environmental Setting: FS 6A is located within a developed portion of the Presidio (between the Main Post and Letterman Complex) and consists of a relatively flat grassy field with a small cluster of redwood trees which would be preserved on-site. There are no state or federal sensitive species at or in the vicinity of FS 6A. However, the site may provide suitable bird nesting habitat.

FS 6A is also located within the Tennessee Hollow riparian corridor (slated for future restoration). However, there are currently no riparian or wetland environments at FS 6A due to the fact that the stream is contained within a subsurface pipe or drainage culvert throughout the length of FS 6A site.

BBDA 3 and 4 are open space natural areas located on the coastal bluffs overlooking the Pacific Ocean. BBDA 3 has a small cluster of redwood trees. There is a population of sensitive plant species, the Marin dwarf flax (*Hesperolinon congestum*), located approximately 150 feet from the northern edge of the area slated for excavation at BBDA 3. There is a wetland feature at BBDA 3 and a freshwater seep emerges immediately downhill of this site. Both of these sites provide suitable bird nesting habitat.

Analysis of Potential Impacts: The proposed activities at FS 6A and BBDA3 will not significantly impact biological resources, as no special status species, sensitive habitats, or wetlands exist at the site. All trees within the assumed limits of the waste at these sites will be removed in advance of the excavation unless tagged for retention. If the excavation shows that the waste extends beyond currently assumed limits, additional trees may be removed.

As part of the remedial action at FS 6A, a subsurface pipe which contains a portion of the Tennessee Hollow creek is expected to be removed. Following remediation, this segment of the creek corridor will be

left in an open natural channel and the 1.2 acre site, including the riparian corridor, will be re-vegetated in accordance with the VMP.

Remaining fill material at BBDA 4 will be re-graded to maintain slope stability. Less than 200 cubic yards of backfill soils is anticipated to be imported and used at BBDA4. The backfill soils at BBDA 4 must meet applicable soil cleanup levels.

On July 23, 2002, the U.S. Department of the Interior's Fish and Wildlife Service (USFWS) determined that the remedial activities at all three locations are unlikely to jeopardize the continued existence of listed species or critical habitat, provided such activities are conducted in compliance with Applicable, Relevant and Appropriate Requirements (ARARs) listed in Table 1 of the Remedial Action Plan.

certain measures are followed. The measures that would be implemented as part of the remedial action plan include:

- Any removed trees will be removed without the taking of migratory birds, their nests, and/or their eggs. If any protected birds, mammals, reptiles or amphibia are encountered during implementation of the remedial actions, work will be halted and appropriate officials will be contacted.
- Prior to the start of excavation at all three sites, flexible plastic construction fencing will be installed around the anticipated excavation area for each site to prevent workers, equipment, and other traffic from disturbing the sensitive species, in the case of BBDA 3, and habitat outside the work zone. Workers on the project will be trained to always remain inside the fenced work zone areas.
- Workers on the project will be trained to identify special status species. In the unlikely event that any sensitive species are found within the area of work, the sensitive plants will be temporarily removed from the sites for the duration of the work and replanted after completion of construction activities. Any such relocation will be performed in consultation with the NPS, the USFWS, and/or the California Department of Fish and Game.
- Construction work will employ surface grading and other controls to minimize erosion and surface water ponding. For the interim period between excavation and re-vegetation, temporary surface drainage and erosion control measures may be required. Such measures may include the installation of drainage ditches, berms, straw check dams, straw wattles, jute netting, or a synthetic geo-fabric cover. Following re-vegetation, stormwater velocities in areas downslope of each of the three sites will be observed as part of routine maintenance activities. If improvements to the existing drainage system become necessary, appropriate measures will be designed and installed.

Over the long-term, there will be a noticeable beneficial effect on biological resource values at all three sites. These effects will result from the removal of non-native and hazardous fill materials, exposure of a segment of natural creek channel (which is currently contained in a pipe underground), and establishment of associated wetland and riparian habitats at FS6A, and the re-vegetation of excavation areas of all three sites in accordance with the Presidio Vegetation Management Plan.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco*. May.

Presidio Trust and Golden Gate National Recreation Area, 2001. *Presidio of San Francisco Biological Assessment, Draft Presidio Environmental Remediation Plan*. November.

Presidio Trust, 2002b. *Presidio Trust Management Plan Final Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

U.S. Department of the Interior Fish and Wildlife Service, 2002. Biological Opinion Letter, Presidio of San Francisco, San Francisco County, California. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant
- No Impact

5. Cultural Resources

Project activities likely to create an impact: Removal of existing vegetation, excavation of contaminated soils, re-grading and re-vegetation.

Description of Environmental Setting: FS 6A and BBDA 3 and 4 are sites in which earthen fill or Army wastes were deposited between 1948 and 1977. The environmental settings are located in Area A and Area B of the Presidio of San Francisco in San Francisco, California and located within the Presidio National Historic Landmark District which is listed on the National Register of Historic Places.

Archaeological Resources

Archaeological Context. FS 6A is in an area designated as one of potential prehistoric (the time period prior to European colonization) archaeological sensitivity. The areas where BBDA 3 and 4 are located have not been listed in either the Presidio of San Francisco National Historic Landmark prehistoric sensitivity zone map or subsequent modifications. Archaeological monitoring of maintenance projects in the immediate vicinity of Fill Site 6A and BBDA 3 and 4 has failed to locate evidence of Native American habitation but the possibility still exists below the three sites. The likelihood of finding a prehistoric archaeological feature, especially at FS6A, is based on similar discoveries within these types of landforms associated with natural water sources on the Presidio and elsewhere in the San Francisco Bay Area.

Fill Site 6A

The FS6A area is also potentially sensitive for historic period Quartermaster Complex archaeological deposits (from the period 1866-1890) when the industry and supplying of the garrison was conducted in the area including stables, shops, blacksmith, bakery, and various storehouses (see Historic Resources section below). Part of the Letterman Complex, constructed between 1915 and 1931, Buildings 1020,1022,1024, and 1026(known as Thompson Hall)- were once located on or adjacent to FS6A. It is likely that some of the construction material and foundations of these buildings which were demolished in 1993, may be located in the site. Archaeological features that were deposited after 1890 are often not considered significant due to the quality of documentation contained in the historic record but are evaluated on a case-by-case basis. The materials contained within Fill Site 6A are not archaeologically significant.

BBDA 3 and 4

BBDA 3 and 4 are near two historic archaeological features and structures, Battery Crosby and Batter Chamberlain respectively, listed in the contributing inventory of the Presidio of San Francisco National Historic Landmark District. These site/structures include the fortification structures as well as associated roads and earthworks. The BBDA 3 area also has potentially sensitive historic period significance in the location of the historic Army road to Battery Crosby. Prior to disturbance of BBDA3, test pits dug under the supervision of the GGNRA archaeologist will be placed in the area of the historic road bed to determine

the existence of the red chert soils used by the Army as a surface for the historic road. At this time some age and content characterization will also be conducted of the historic value of artifacts within the BBDA 3 landfill.

Other resources, identified during recent archaeological surveys, include a series of ephemeral era landforms including wagon road traces, foxholes, machine gun pits, and undefined earth modifications in the vicinity of BBDA 3 and 4 along the Baker Beach bluffs. In addition, vestiges of the Spring Valley Water Company wooden flume system, which transported water from Lobos Creek to San Francisco in part along the Baker Beach bluffs, were identified but not formally recorded in the late 1970s by the GGNRA. Portions of this flume may be within the BBDA 3 or 4 area.

Impact Assessment. If the Fill Site 6A, BBDAs 3 and 4 projects remove only the fill material, no impacts to archaeological features will occur. If contamination extends below or next to the fill material and therefore requires removal, it will be necessary to monitor the areas of "over-excavation" for prehistoric and historic archaeological deposits, and to carry out an appropriate level of data recovery should a discovery occur. To avoid inadvertent over-excavation, a detailed analysis of the stratigraphic interface between the bottom of the landfill and the top of native soil should be undertaken, in order to recognize this vertical limit and avoid unintentional disturbance of potential pre-historic sites. Extensive archaeological testing below the fill site prior to its removal is not considered practical given the moderate expectation of an archaeological discovery. However, an archaeological survey is being conducted to identify any WWII, Spring Valley Water Company, or other significant historic archaeological properties which are within the vicinity of the landfill. In addition, archaeological monitoring will be conducted by the Park Archaeologist during any remediation actions at BBDA 3 and 4 to ensure that historic archaeological properties associated with Batteries Crosby and Chamberlain, or that fall within the historically significant periods of the Presidio NHL (to 1945) are recorded and not adversely impacted.

Historic Resources

The open and un-built nature of the section of the Tennessee Hollow channel north of Lincoln Boulevard in the location of the Fill Site 6A project, seen in late nineteenth century photographs of the site, started to change by 1909. Two buildings, a Catholic Chapel and an isolation ward, were constructed west of the now developed Girard Road. The low open channel area was being used as the Post Nursery and supported by both a hot house and root house east of the warehouses fronting Halleck.

By 1914, the open swale area north of Lincoln was filled in, allowing for the construction of four large Quarter Master Storehouses and a rail road spur. The railroad spur down the middle of the storehouses and the buildings themselves contributed to leveling of the site. The first floor elevation of these structures were most likely below the elevated grade of Lincoln. The remaining stone and pipe guardrail which is a cultural landscape feature that contributes to the significance of the National Historic Landmark District. acted to hold the higher grade of Lincoln from the lower floor elevation of the storehouses. Part of the Letterman Complex, constructed between 1915 and 1931, Buildings 1020,1022,1024, and 1026 (known as Thompson Hall) were once located on or adjacent to FS6A. They were demolished in 1993.

Aerial photos and subsequent surveys indicate that the landscape in this area remained relatively unchanged from 1914 until the end of the period of significance which is 1945. It remained industrial in character, free of significant vegetation with the exception of the trapezoidal area behind the two western most store houses. Here in the low area behind Buildings 224 and 225 a number of trees, most likely invasive Acacia species, grew forming a planted edge to the west side of the Letterman Complex. While these trees are in a location originally proposed for planting in the Major Jones plan for the Presidio of San Francisco, they are most likely volunteer plantings that took advantage of the open unused spaces between the buildings.

Impact Assessment: The proposed project would remove all existing vegetation with the exception of several redwood trees near the middle of the site which post-date the period of significance but are associated with the now-demolished (and historic) nurse's residence. None of the vegetation proposed for removal is significant from a cultural landscape perspective, and re-grading and re-vegetation would not change character defining features of the National Historic Landmark District. Lincoln Boulevard would

remain the principal connection between the Letterman district and the Main Post, the stone and pipe guardrail would remain unchanged, and replacement vegetation would not create a visual barrier any greater than posed by existing grades and vegetation. The project and site restoration would comply with the Secretary of Interior Standards for Rehabilitation of Cultural Landscapes and the Vegetation Management Plan following completion of the project at Fill Site 6A.

At each of the three sites the project is expected to only remove non-native soil and debris that was deposited by the Army. Because the projects are not expected to involve excavation of native soils, the project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Human Remains

The project sites are not located on, or immediately adjacent to, any known areas of human burial. At each of the three sites the project is expected to only remove non-native soil and debris that was deposited by the Army. Because the projects are not expected to involve excavation of native soils, the project would not disturb any known human remains, including those interred outside of formal cemeteries.

References:

National Historic Landmark District Update, 1993. *The Presidio of San Francisco, San Francisco, CA* National Park Service.

Presidio Trust, 2002b. *Presidio Trust Management Plan: Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

6. Geology and Soils

Project activities likely to create an impact: Excavation of fill and contaminated soil; regrading and revegetation with native plants; subsequent groundwater monitoring.

Description of Environmental Setting: The Presidio is located in the San Francisco Bay area, a region with a high degree of tectonic activity. Major faults within a 25-mile radius of the Presidio include the San Andreas Fault, the Hayward Fault, and the Calaveras Fault. FS 6A is situated in the Northeastern Groundwater Area of the Marina Groundwater Basin. At FS 6A, the debris fill extends to depths of 7 to 13 feet bgs. The Colma Formation and Franciscan Formation underlie the fill. BBDA 3 is located near the southern boundary of the Coastal Groundwater Basin, and BBDA 4 is located in the northwestern corner of the Lobos Groundwater Basin. At BBDA 3, there is debris fill to a maximum depth of approximately 20 feet bgs. The northern portion of BBDA 3 is predominantly Franciscan Formation overlain by unstratified mixtures of bedrock fragments, sand, silt, and clay. The southern portion is covered almost entirely by Quaternary dune sand. A small fault potentially runs southwest-northeast across Fill Site 5, which extends across the southeastern corner of BBDA 3, but there are no historic records indicating movement along the fault. BBDA 4 is underlain entirely by Quaternary dune sand.

Analysis of Potential Impacts: The proposed remedial actions would remove and replace or regrade soils and are thus not expected to significantly influence the geologic/seismic hazard levels at the sites or expose people and/or structures to adverse impacts related to geologic and seismic hazards. Review of hazard maps and reports, including the U.S. Geological Survey publications, reveals no significant local hazards, such as seismic hazard, landslide potential, and liquefaction potential at FS 6A and BBDA 4. Under existing conditions, localized slope movement and liquefaction potential exists at BBDA 3, if a seismic event were to occur. These conditions would not be affected by the excavation (Treadwell & Rollo, 2002). There has been no reported historic activity on a potential fault located near BBDA 3. The removal of the relatively small volumes of surficial fill and soil proposed at the three sites is not expected to trigger seismic activities. The project will not result in significant soil erosion or loss of topsoil, as erosion control measures will be implemented and the sites will be revegetated. The geological and seismic environments will not be affected by the remedial activities. The project activities will not be conducted on expansive soils that create a substantial risk to life or property and will not involve the installation of septic tanks or alternative wastewater disposal systems. Presidio Trust excavation permits are required and will be obtained prior to the start of excavation activities. City and County of San Francisco excavation permits are not required since the excavation work is taking place on Federal property. After site excavation is complete, the site will be graded to approximate pre-landfill native soil elevation contours. The remedial design will include provisions for restoring slope stability and safety to natural conditions.

References:

California Division of Mines and Geology (CDMG), 2000. *Seismic Hazards Zones, City and County of San Francisco*. CDMG Open File Report 2000-009. November.

CDMG – California Department of Conservation, 1988. *Major Faults and Earthquake Epicenters in the San Francisco Bay Area*. International Conference of Building Officials. February.

Dames & Moore, 1997. *Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco*. January.

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Schlocker, J., 1974. Geology of the San Francisco North Quadrangle, California. United States Geological Survey Professional Paper 782.

Treadwell & Rollo, Inc., 2002. *Memorandum to Craig Cooper of the Trust Regarding Slope Stability at Baker Beach Disturbed Area 3*. November.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

U.S. Geological Survey (USGS), 1978. Historic Ground Failures in Northern California Associated with Earthquakes. Geological Survey Professional Paper 993.

USGS, 2000. Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

7. Hazards and Hazardous Materials

Project activities likely to create an impact: Excavation, recycling, and off-site transport of fill, debris and contaminated soil.

Description of Environmental Setting: FS 6A and BBDA 3 and 4 are former disposal sites filled primarily with debris (solid) and possibly with some municipal wastes. Based on historical information, the waste types likely to be present in significant quantities are asphalt and concrete, masonry, soil impacted with COCs, and some municipal wastes including plastic, glass, aluminum cans, and paper.

The COCs and cleanup levels differ between the three sites according to the background lithologies and/or the extent of freshwater springs and seeps. The COCs and highest observed concentrations in soil at FS 6A (and associated cleanup levels) are:

- PCB-1260 at 1.4 mg/kg (0.33 mg/kg for ecological special status)
- Mercury at 0.49 mg/kg (0.4 mg/kg for ecological special status)

The COCs and highest observed concentrations in soil at BBDA 3 (and associated cleanup levels, depending on the formation) are:

- cadmium at 5.44 mg/kg (1.9 and 1.7 mg/kg for serpentinite and beach/dune sand, respectively),
- cobalt at 279 mg/kg (170 and 20 mg/kg),
- lead at 1,000 mg/kg (160 and 160 mg/kg),
- zinc at 2,900 mg/kg (160 and 66 mg/kg),
- DDT at 0.047 mg/kg (0.0082 and 0.0082 mg/kg),
- chlordane (including alpha- and gamma-chlordane) at 0.31 mg/kg (0.009 and 0.009 mg/kg),
- dieldrin at 0.14 mg/kg (0.039 and 0.039 mg/kg), and
- PCB-1254 at 0.197 (0.033 and 0.033 mg/kg).

The COCs and highest observed concentrations in soil at BBDA 4 (and associated cleanup levels for beach/dune sand) are:

- lead at 240 mg/kg (160 mg/kg),
- zinc at 172 mg/kg (66 mg/kg),
- DDT at 0.1 mg/kg (0.0082 mg/kg), and
- chlordane (gamma-chlordane) at 0.4 mg/kg (0.009 mg/kg).

Past and on-going quarterly groundwater monitoring at FS 6A has not indicated any significant impacts to groundwater quality. Only limited surface water seep sampling has been conducted at BBDA 3. Groundwater has not been encountered at BBDA 4.

Analysis of Potential Impacts: The proposed remedial action is designed to remove any contaminated fill and soil from the disposal sites, expose underlying uncontaminated soil, recycle the excavated materials where possible, and relocate the contaminated fill and soil to an off-site facility designed to manage the waste. The work will be conducted in accordance with federal, state, and local regulations including the Toxic Substances Control Act, the State of California Hazardous Waste Requirements, the State of California Solid (Non-Hazardous) Waste Requirements, the State of California Medical Waste Handling

requirements, the Presidio Trust Act, the GGNRA Act, and NPS Management Policies and the PTMP Mitigation Monitoring and Enforcement Program (contained in the Record of Decision).

The excavations will be complete when confirmation samples from the floor, perimeter and sidewalls of the excavation areas meet the cleanup levels applicable to each site. The excavations will be graded where appropriate, and the site will be stabilized with erosion control measures and native vegetation. The groundwater in and around FS 6A and the surface water and groundwater at BBDA 3 will be monitored to ensure that COCs do not migrate from the sites following the remedial efforts. Groundwater monitoring following closure will follow prescribed methods to prevent the release of new contaminants into the environment and/or the transfer of existing contaminants.

Workers implementing the removal and monitoring activities will be appropriately trained and will use personal protective equipment to minimize exposure to contaminants. Access to the sites will be restricted to prevent potential public exposure during excavation. Further potential exposure of workers and public to contaminated materials during excavation and loading for off-site transport would be mitigated by engineering and dust control measures to include the daily cover of any exposed putrescible waste (none observed to date) and stockpiled fill and soil, air monitoring, and water spraying to control airborne dust from the excavation and stockpiled materials. There will be on-site monitoring for methane and other gases as appropriate and dust and asbestos monitoring at site perimeters. All hazardous wastes generated in the excavation of the landfills will be properly stored, handled, and transported. Any medical wastes discovered in the remedial process will be managed in compliance with existing health and safety codes. The Trust will comply with requirements for proper recordkeeping. Wastes generated during monitoring well installation and sampling will be managed and disposed in accordance with existing regulations.

The excavated wastes will be solid and non-explosive and in the unlikely event of a spill of such materials during transport will not present a significant health or environmental threat. In the event of an accident during transport to the landfill, a release will be limited to the volume of a truckload. The contaminated soil will be transported in accordance with state and federal requirements for the handling and transportation of hazardous wastes. Transport will occur along authorized haul routes within the Presidio, and along major thoroughfares outside the Presidio. These routes may in some instances come within one-quarter mile of existing or proposed schools, but will not pose a significant hazard for the reasons stated above. No approval is required from the City and County of San Francisco or other agency for transport along major thoroughfares and signed truck routes. Intermittent transport activities, involving no road closures or modifications also will not impair implementation of, or physically interfere with emergency response or evacuation plans.

FS 6A and BBDA 3 and 4 are not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A.* (in preparation).

Presidio Trust, 2002c. *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco, Record of Decision.* August.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4.* June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4.* (in preparation).

Presidio Trust, 2003d. *Presidio Trust Revised Feasibility Study, Main Installation Sites, Volumes I and II.* March.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

8. Hydrology and Water Quality

Project activities likely to create an impact: Excavation, stockpiling, recycling, and off-site transport of fill and contaminated soil; and revegetation of the excavations; installation of new groundwater monitoring wells; subsequent groundwater monitoring.

Description of Environmental Setting: The three sites lie in distinct groundwater basins. FS 6A is situated in the Northeastern Groundwater Area of the Marina Groundwater Basin. Depth to groundwater ranges from 6 to 22 feet bgs. The groundwater flow direction in the area of FS 6A is generally northerly, towards the San Francisco Bay and groundwater cleanup levels for FS 6A are linked to drinking water and surface water thresholds. Past and on-going quarterly groundwater monitoring has not indicated any significant impacts to groundwater quality at FS 6A. A subsurface stormwater drainage pipe transverses FS 6A. BBDA 3 is located near the southern boundary of the Coastal Groundwater Basin, and BBDA 4 is located in the northwestern corner of the Lobos Groundwater Basin. Based upon hydrogeologic information from adjacent areas, groundwater may be present in limited areas of the landslide deposits, dune sands, and the weathered serpentinite bedrock formations in the vicinity of BBDA 3 and 4. However, no groundwater was encountered in any of the soil investigations conducted at these two sites. Groundwater is assumed to follow the general topographic trend, which is to the west and toward the Pacific Ocean. A freshwater seep is located at the western boundary of BBDA 3. Only limited sampling of the seep has been conducted. Because a seep is present at BBDA 3, cleanup levels for groundwater at BBDA 3 apply to seeps and to groundwater that emerges as a freshwater seep.

Analysis of Potential Impacts: The excavation, recycling and off-site transfer of contaminated fill and soil will not significantly impact current groundwater conditions. Water generated from site decontamination activities, groundwater monitoring, or stockpile drainage collection will be contained for sampling and waste profiling prior to discharge to the sanitary sewer. All discharges to the sanitary sewer shall be in accordance with existing City and County of San Francisco sanitary sewer discharge order for the Presidio. The proposed remedial activities will beneficially impact water resources near FS 6A and BBDA 3 and 4 because potential sources of future groundwater contamination will be removed and the groundwater will be monitored. The activities will be conducted in accordance with federal, state, and local regulations and agencies including the San Francisco Bay Basin Water Quality Control Plan (Basin Plan).

For disturbed areas greater than one acre in size, the RWQCB issues National Pollution Discharge Elimination System (NPDES) General Permits for Construction Activity. The permits require implementation of Best Management Practices (BMPs) for construction site planning and management, erosion and sediment control, and pollution prevention. The Trust will perform the NPDES General Permit Notification and Monitoring. BMPs will be performed as outlined in the design and bid documents and the permit.

Remedial actions at FS 6A and BBDA 3 are anticipated to disturb areas greater than one acre. The Trust will develop and implement Stormwater Pollution Prevention Plans (SWPPPs) for each of the three sites and perform associated monitoring activities. Vegetation restoration is expected to occur as soon as practicable and appropriate after completion of excavation work. In the interim, temporary surface drainage and erosion control measures may be required. Such measures may include the installation of drainage ditches, berms, straw check dams, straw wattles, jute netting, and/or a synthetic geofabric cover.

The remedial action at FS 6A will facilitate the restoration of an approximately 400 foot segment of the Presidio's Tennessee Hollow riparian corridor. Prior to or during establishment of FS 6A, the former intermittent stream was channeled into the storm drain which currently transverses FS 6A. Subsequent to remedial actions at the site, the stream will be daylighted as part of the riparian area. The restored riparian area is being designed to maximize natural hydrogeologic processes and engineered to control flow velocity and minimize erosion. Water flowing through the restored riparian area is anticipated to meet

surface water quality criteria.

The surface water runoff quantities are not expected to change as a result of the waste removal activities described above at either of the sites, although localized changes in velocities may occur. It is therefore anticipated that no improvements will be necessary to the existing storm water collection systems located downslope of any of the three sites. These areas will be observed as part of routine maintenance activities. If improvements become necessary, the Trust will contract with a civil engineer or contractor to design and install appropriate measures.

New and existing monitoring wells will be installed, managed, and ultimately properly abandoned using methods to minimize impacts on the quantity and quality of the groundwater resource. At FS 6A and BBDA 3, three new groundwater monitoring wells will be installed and screened where groundwater is encountered. The exact locations of the proposed new wells will be identified in the work plan for implementation of the remedial action. At FS 6A, existing well LF6GW102 will be abandoned prior to the commencement of remedial activities. New wells LF6GW104, LF6GW105 and LF6GW106 will be installed at FS 6A. These three new wells will be added to 2 existing wells to create the overall well monitoring network for FS 6A. At BBDA 3 new wells BB3GW100, BB3GW101 and BB3GW102 will be located progressively downgradient of each other from east to west in the impacted portion of the site. Groundwater samples from the new wells will be collected and analyzed as part of the three-year post-closure monitoring program. The freshwater seep (BB3SW100) will continue to be sampled as well when water is available in that seep. In addition, any new seeps created as a result of the remedial action will be identified and monitored. No groundwater monitoring wells are proposed for BBDA 4 as groundwater impacts at this site are highly unlikely. Groundwater generated from sampling activities will be discharged to the sewer under a permit with the City and County of San Francisco.

The remedial actions will not violate water quality standards or waste discharge requirements. Discharge water from site decontamination, stockpile drainage, or groundwater monitoring activities will be discharged to the sanitary sewer under the existing City and County of San Francisco Sanitary Sewer Discharge Order. Supplies of groundwater and recharge will not be depleted or interfered with by the remedial actions. During excavation the existing local drainage pattern will be altered temporarily prior to grading and revegetation. The temporary drainage conditions will be managed with engineering controls. However, at FS 6A, drainage will be altered to a more natural condition. The remediation project will have negligible long-term impact on local drainage and will not increase surface water runoff. No streams or rivers will be affected by the remedial actions at BBDA 3 and BBDA 4. The remediation at FS 6A will restore a segment of a riparian corridor within the boundaries of the FS 6A site. No flood concerns or other inundations (e.g., tsunami) are associated with the planned remedial activities.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Treadwell & Rollo, Inc., 2001. *Field Sampling Plan, Presidio Groundwater Monitoring Program Project*. April.

Treadwell & Rollo, 2003a. *Quarterly Groundwater Monitoring Report Fourth Quarter 2002, Quarterly Groundwater Monitoring Program, Presidio of San Francisco*, March.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact

- No Impact

9. Land Use and Planning

Project activities likely to create an impact: None.

Description of Environmental Setting: FS 6A is located within a developed portion of the Presidio (Main Post and Letterman Complex). Residences (Buildings 1030 and 1029) are located immediately north of FS 6A. BBDA 3 and 4 are located within the coastal bluffs. No hospitals, schools, or dense residential clusters are in the immediate vicinity of the BBDA 3 and 4 sites. The Army used FS 6A and the western portion of BBDA 3 for the disposal of construction debris. The construction/disposal activities at BBDA 3 and FS 6A ceased in 1973 and 1977, respectively, and the two sites are not currently in use. Construction activities at BBDA 4 were completed by 1955.

Analysis of Potential Impacts: Existing and proposed land uses in areas of the Presidio under National Park Service jurisdiction are specified in the NPS GMPA and are generally recreational. Existing and proposed land uses in areas of the Presidio under Presidio Trust jurisdiction are designated by the PTMP and include a wide variety of uses, such as residential, recreational, office, visitor amenities, educational and cultural facilities. Land use for BBDA 3 and 4 is designated by the GMPA as undeveloped open space with recreational uses. FS 6A is designated in the PTMP as recreational, residential and special status ecological uses. All three sites are proposed to be revegetated in accordance with the VMP. The proposed remedial activities will improve the environmental conditions in the vicinity of the sites. The remedial activities would not alter or preclude existing and proposed land uses, and would not conflict with any applicable land use plan, policy, or regulation, especially those related to land use and habitat/community conservation.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A.* (in preparation).

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco.* May.

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco.* May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4.* June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4.* (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California.* July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

10. Mineral Resources

Project activities likely to create an impact: None.

Description of Environmental Setting: There are no known significant occurrences of mineral resources at FS 6A or BBDA 3 or 4.

Analysis of Potential Impacts: The remediation and monitoring activities planned for the three sites would require the removal of debris and a limited amount of native soil and earth materials. No loss in availability of known mineral resources and resource recovery site is expected. The on-site construction equipment will consume modest amounts of non-renewable petroleum resources. The sites are not designated as locally important mineral resource recovery sites.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

11. Noise

Project activities likely to create an impact: Excavation and off-site transport of fill and contaminated soil.

Description of Environmental Setting: FS 6A is located within a developed portion of the Presidio (Main Post and Letterman Complex). Residences (Buildings 1030 and 1029) are located immediately north of FS 6A. BBDA 3 and 4 are located within the coastal bluffs. No hospitals, schools, or dense residential clusters are in the immediate vicinity of the BBDA 3 and 4 sites.

There are over six million square feet of buildings at the Presidio, and an estimated residential population of about 2,500 persons. Densely populated residential neighborhoods abut the Presidio on the south and east. The noise environment within and outside the Presidio is largely a factor of the volume of automobile traffic, with quiet areas located farthest from major transportation corridors such as Doyle Drive and Park Presidio Boulevard (US 101 and Rt 1).

Analysis of Potential Impacts: Noise generated by excavation and hauling activities will be temporary, intermittent, and dispersed throughout the 1,480 acre Presidio. In addition, the Presidio Trust will require contractors and other equipment operators to conduct excavation activities in a manner consistent with the San Francisco Noise Ordinance (San Francisco Municipal Code, Section 2907b), which requires that each piece of powered equipment, other than impact tools, emit noise levels of not more than 80 A-weighted decibels (dBA) at 100 feet. If deemed necessary to reduce noise levels, barriers will be erected around the construction sites and stationary equipment such as compressors; this would reduce noise by as much as 5 dBA. Because of these controls, the temporary, intermittent and dispersed nature of noise generating activities, and the fact that work will occur only during daylight hours, project excavation will not result long-term or significant noise increases. Nearby housing occupants will be informed of the work schedules to minimize inconveniences to these residents.

Within the Presidio, transport of equipment and soils to and from the sites will occur along routes approved by the Presidio Trust. Outside of the Presidio, haul routes will generally follow major thoroughfares and

signed truck routes. Thus, activities related to the project will not generate unusual or excessive noise or vibration off site.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

12. Population and Housing

Project activities likely to create an impact: None.

Description of Environmental Setting: The project will involve a limited number of workers on the three sites during workday hours over the implementation period. Residential buildings (Buildings 1030 and 1029) are located immediately north of FS 6A. The nearest cluster of residences to BBDA 3 and 4 are the Baker Beach Apartments, which are located approximately 500 feet south of BBDA 4 and 1,000 feet south of BBDA 3.

Analysis of Potential Impacts: This project will have no impact on existing housing and population. No workers will require housing. No people or housing will be displaced.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact

- No Impact

13. Public Services

Project activities likely to create an impact: None.

Description of Environmental Setting: FS 6A and BBDA 3 and 4 are former disposal sites within the Presidio of San Francisco. The Presidio of San Francisco is a National Historic Landmark characterized by coastal bluffs, the Lobos Creek Valley, Crissy Field, community and administrative facilities, residential and commercial structures, and a golf course. The Presidio is a federal preserve, under the jurisdiction of the National Park Service and the Presidio Trust. Police, fire, and emergency response are provided by the federal government (Park Police and Presidio Fire Department).

Analysis of Potential Impacts: The excavation, stockpiling, recycling, and off-site transport of contaminated soil from the three sites will not impact or alter existing governmental facilities/operations or require additional governmental facilities/operations. The project will not require additional services from local authorities.

References:

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco*. May.

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

14. Recreation

Project activities likely to create an impact: Excavation, stockpiling, and off-site transport of contaminated soil and revegetation.

Description of Environmental Setting: Designated a National Historic Landmark in 1962, the Presidio has a 220-year history as a military garrison under three flags has left a rich collection of historic architecture and landscaped features. The Presidio is currently a national park site, and includes recreational, residential, and office-type land uses, in addition to natural areas and zones of non-native forest.

Recreational uses vary from passive activities, such as walking and bird watching, to active sports such as baseball, tennis, and bicycling. FS 6A is located within a developed portion of the Presidio (Main Post and Letterman Complex). All of FS 6A and the western portions of BBDA 3 are former disposal sites in the Presidio. BBDA 3 and 4 are located within the coastal bluffs.

Analysis of Potential Impacts: The proposed remedial activities will remove and replace soil and vegetation at the sites and allow their revegetation with native plants. Each of the three sites will be fenced to restrict and redirect public access for several weeks during construction and subsequent early stages of site revegetation and restoration. However, once vegetation has been re-established, public access to the sites will resume. Remediation and revegetation may permit some increase in passive recreational use of the sites, but not of a magnitude that could impact the improved physical environment or surrounding areas.

Recreation and the scenic beauty of the sites will be enhanced due to the revegetation and restoration efforts.

References:

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco*. May.

Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco*. May.

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

15. Transportation and Traffic

Project activities likely to create an impact: Temporary traffic restrictions during site excavation; off-site transportation of fill, contaminated materials, and recyclable materials.

Description of Environmental Setting: FS 6A and BBDAs 3 and 4 are former disposal sites within Presidio. FS 6A may be accessed from Girard Road near Lincoln Boulevard and from an open space between Presidio Buildings 1029 and 229. BBDAs 3 and 4 are accessed directly from Lincoln Boulevard. Vehicles serving the three sites will have easy access to Lincoln Boulevard, which is a main thoroughfare. The Presidio is currently a national park site, and includes recreational, residential, and office-type land uses, in addition to natural areas and zones of non-native forest. With the exception of two regional highways (US 101 and Rt 1) maintained by the California Department of Transportation, roads within the Presidio are maintained by the federal government, and serve mostly local traffic. Traffic speeds are low, and congestion occurs intermittently at principal (four-way stop sign controlled) intersections. Traffic in city neighborhoods surrounding the Presidio varies from very light (in residential neighborhoods), to heavy (along Lombard Street, for example).

Analysis of Potential Impacts: The proposed remedial activities will be conducted during daylight hours. The work may require weekday daytime (from 5:00 a.m. until 3 p.m.) closure for a period of approximately 6 to 8 weeks of: (a) approximately 300 feet of Girard Road starting from the corner with Lincoln; (b) all parking places on both sides of the south end of Bowley Street to Lincoln Boulevard; and, (c) 200 feet of the northbound shoulder of Lincoln Blvd just north of Battery Crosby Road. These roadways are local access roadways serving uses in the immediate area. Halleck Street, which provides a connection between the Crissy Field and Main Post areas of the Presidio, will not be closed. Employees of nearby businesses, park residents and visitors would experience some delays, and would need to use other roadways in the Presidio to reach their destination. In each case, detour and/or other signs will be posted to inform drivers. Partial and temporary road closures would not be considered significant, and would not impede emergency vehicle access.

An estimated total of 65,000 cubic yards of fill and soil will be removed from the three disposal sites, with about half of that amount being removed from FS6A and the other half being removed from BBDAs 3 and 4. Using the worst case scenario of a simultaneous work schedule (see Section I, Schedule), the excavation portion of the remediation is expected to require between 8 and 10 weeks, equating to approximately 40 to 50 working days when haul trucks will be used. At 16 cubic yards per truckload, approximately 8,125 truck trips will be required, or approximately 160 to 200 truck trips per day. It should also be noted that it is likely that the sequential excavation schedule will be utilized (12 to 16 weeks equating to approximately

60 to 80 working days) and therefore truck traffic per day would be reduced to approximately 100 to 135 vehicle trips per day.

To minimize impacts to neighborhoods adjacent to the Presidio and comply with 3-ton vehicle restrictions on many City streets in neighborhoods adjacent to the Presidio, no entry or exit of trucks will be allowed via Arguello Blvd, Presidio Blvd, 15th Avenue, or 25th Avenue gates. Trucks would enter the Presidio via the Gorgas gate (from southbound 101), Lombard Gate (from northbound U.S. 101) and the Golden Gate Bridge Toll Plaza from Doyle Drive. Trucks would be allowed to exit the Presidio via the Marina gate (for traffic onto northbound Doyle Drive only), Lombard Gate for southbound U.S. 101 and at the Golden Gate Bridge Toll Plaza.

From the Golden Gate Bridge Toll Plaza, trucks would travel to destinations via U.S. 101 (Golden Gate Bridge to the north and Doyle Drive, Richardson Avenue and Lombard Street to the east), or via Doyle Drive and Hwy. 1 (Park Presidio Boulevard and 19th Avenue to the south). These routes are consistent with the Freight Traffic Routes identified in the *Transportation Element of the General Plan of the City and County of San Francisco*. Trucks would travel between the Golden Gate Bridge Toll Plaza and the sites via Lincoln Boulevard.

The section of Lincoln Boulevard between the BBDA 3 and 4 sites and the Golden Gate Bridge Plaza currently carries about 740 vehicles per hour in both directions during the am peak hour and about 800 vehicles per hour in both directions during the pm peak hour. Assuming the most likely schedule of sequential project implementation, truck traffic to and from BBDAs 3 and 4 would result in an additional 50 to 68 truck trips per day (6 to 8 truck trips per hour) on this roadway segment. Conservatively assuming the concurrent schedule, truck traffic to and from BBDAs 3 and 4 would result in an additional 80 to 100 truck trips per day (9 to 11 truck trips per hour) on this roadway segment. It should be noted that due to truck access issues for the remediation at BBDA 3, the project may require that trucks travel the segment of Lincoln Boulevard between Battery Crosby Road and Bowley Street (less than ½ mile) in order to facilitate easy turn-around of vehicles. However, the extra trips on this segment of Lincoln Boulevard would not cause the traffic volumes to exceed the roadway capacity. The intersections of Lincoln/Golden Gate Bridge Viewing Area and Lincoln/Merchant would be most affected by the project-generated truck traffic traveling to and from BBDAs 3 and 4. These intersections currently operate at level of service (LOS) C or better during the am peak hour (typically between 7:30 am and 8:30 am) and pm peak hour (typically between 4:30 pm and 5:30 pm). Loading would generally occur between the hours of 5:30 am and 2:00 pm, thereby minimizing the impact on peak hour traffic conditions. After leaving and traveling through the Golden Gate Bridge Plaza, truck trips will disperse and potential impacts on traffic operating conditions would be substantially diminished. Therefore, the additional 50 to 68 truck trips per day (6 to 8 truck trips per hour) would not cause the level of service at the affected intersections to deteriorate to an unacceptable level.

FS 6A would also generate about 50 to 68 daily truck trips and 6 to 8 truck trips per hour under the sequential schedule and 80 to 100 daily truck trips (9 to 11 truck trips per hour) under the concurrent schedule. Trucks traveling to FS 6A from northbound US 101 would enter the park via the Lombard gate. Trucks entering the park from southbound US 101 would enter via the “hook ramp” at the Gorgas gate. Trucks leaving the site would exit via the Lombard gate to travel south on US 101 or via the Marina gate to travel north on US 101. Loading would generally occur between the hours of 5:30 am and 2:00 pm, thereby minimizing the impact on peak hour traffic conditions. The Lombard/Lyon and Lombard/Richardson intersections near the Lombard gate are the intersections that would be most affected by truck traffic on these routes. Even if all of the FS 6A truck traffic for the duration of the excavation period were to travel through these intersections, the additional 6 to 11 truck trips per hour are not expected to cause either intersection to operate at LOS E or F. Therefore, the proposed remediation will not significantly increase local traffic in relation to the existing traffic load/street capacity or cause congestion levels to exceed defined standards.

The remediation project will not alter local traffic patterns in ways conflicting with adopted policies, plans, or programs that support alternative transportation.

Trucks will be dispatched to the job sites from remote locations, and therefore the truck drivers will not park personal vehicles at the Presidio. A limited number of contractor employees are expected to be working at each site that would park in the vicinity of each site. There would be adequate space on-site or nearby to accommodate parked vehicles for these employees.

References:

City and County of San Francisco Planning Department, 1995, *Transportation: An Element of the General Plan of the City and County of San Francisco*.

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco*. May.

Presidio Trust, 2002b. *Presidio Trust Management Plan: Final Environmental Impact Statement*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

16. Utilities and Service Systems

Project activities likely to create an impact: None.

Description of Environmental Setting: Utilities and public services at the Presidio are mostly provided by the federal government or purchased from other entities. For example, the Presidio has its own water treatment plant, which provides about 80% of the Presidio's water needs, with the rest of the water being purchased from the City and County of San Francisco. The federal government maintains all water, sewer, electrical, and gas distribution systems within the Presidio. There are currently no utilities inside the footprint of BBDA 3 and 4. A number of live underground and overhead utility lines, including a 72-inch diameter underground stormwater drain pipe, cross Fill Site 6A. The three sites do not directly consume utilities and services.

Analysis of Potential Impacts: No utilities or service systems will be impacted by the project at BBDA 3 and 4. The proposed remedial efforts at FS 6A will require temporary relocation of water and electrical utilities but disruptions during relocation will be short-term (on the order of 2-4 hours) and would only effect services to nearby buildings on the Presidio.

The proposed activities will also not directly require or generate need for significant utilities and services, including those involving wastewater treatment, stormwater drainage, and waste disposal. No new water, sewage, and electrical services will be required during or following remediation. An existing stormwater

conveyance structure within the impacted area of FS 6A will be permanently removed. Stormwater will be daylighted and will flow in a restored creek system all the way across the site and will re-enter the existing stormwater pipe at a new headwall to be constructed along the north side of the site.

All materials excavated from the three sites will be hauled to an off-site facility designed to manage the waste. The remediation activities will be conducted in accordance with federal, state, and local statutes and regulations related to solid waste. Collected water from site decontamination, stockpile drainage, or groundwater monitoring activities will be tested and discharged to the sanitary sewer under the existing City and County of San Francisco Sanitary Sewer Discharge Order.

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A*. (in preparation).

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco*. May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

17. Mandatory Findings of Significance

Project activities likely to create an impact: Excavation, stockpiling, recycling, and off-site transport of contaminated soil; and removal and replacement of vegetation at the excavation sites; subsequent groundwater monitoring,

Description of Environmental Setting: FS 6A is located within a developed portion of the Presidio (Main Post and Letterman Complex). The eastern portion of BBDA 3 and most all of BBDA 4 consist of earthen fill placed to support Lincoln Boulevard. All of FS 6A, the western portion of BBDA 3, and a small portion of BBDA 4 are former disposal sites in the Presidio. BBDA 3 and 4 are located within the coastal bluffs. The sites are designated for recreational or residential use following the remediation.

Analysis of Potential Impacts:

Describe to what extent the project would:

- a. Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

Given the nature and limited scope of work involved in soil removal, the project will not degrade the quality of the environment, substantially reduce the habitat of fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered animals, or eliminate important examples of California history or prehistory. Potential impact topics are addressed in more detail within preceding sections of this document. As described, precautions will be taken to ensure the livelihood of the special plant communities according to state, federal, and local regulations.

- b. Have impacts that are individually limited but cumulatively considerable.

The cumulative impacts from remediation of FS 6A and BBDAs 3 and 4 and other projects being conducted at the Presidio are expected to be less than significant. The small nature of most projects, such as landscaping, bikeway and trail construction, and building refurbishing, means they are easily scoped to avoid significant environmental impacts either singly or in combination with each other. Impacts resulting from large projects such as the Lucas Digital Arts Center Project, the Water Recycling Plant and the Richardson Avenue Access Project are also expected to be less than significant following implementation of identified mitigation measures associated with those projects. The initial phase of the Lucas Digital Arts Center Project (building demolition and site grading) has recently been completed. The second phase of the project (construction of the 850,000 square foot Lucas Digital Arts Center) began in January 2003 and will be completed in approximately three years. The Water Recycling Plant is scheduled to commence construction in the summer of 2003. The Richardson Avenue Access Project is scheduled to commence construction in the summer of 2003, with an expected 6-month construction phase. Project Managers will be closely coordinating the schedules, transportation plans and staging areas for the construction activities planned in the Fill Site 6A vicinity.

Remediation of hazardous substances at the Presidio other than FS 6A and BBDAs 3 and 4 are also scheduled to commence in the fall of 2003, and will easily be coordinated to avoid overburdening local streets with construction traffic or other potential cumulative effects.

- c. Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

As described under all the Environmental Resource Sections, the project would have no environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly

References:

MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A.* (in preparation).

Presidio Trust and Golden Gate National Recreation Area, 2001. *Presidio of San Francisco Biological Assessment Draft Presidio Environmental Remediation Plan.* November.

Presidio Trust, 2002a. *Presidio Trust Management Plan, Land Use Policies for Area B of the Presidio of San Francisco.* May.

Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4.* June.

Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4.* (in preparation).

U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California.* July.

Findings of Significance:

- Potentially Significant Impact
- Potentially Significant Unless Mitigated
- Less Than Significant Impact
- No Impact

V. DETERMINATION OF APPROPRIATE ENVIRONMENTAL DOCUMENT

On the basis of this Initial Study:

- I find that the proposed project COULD NOT have a significant effect on the environment. A NEGATIVE DECLARATION will be prepared.
- ✓ I find that although the proposed project COULD HAVE a significant effect on the environment, mitigation measures have been added to the project which would reduce these effects to less than significant levels. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project COULD HAVE a significant effect on the environment. An ENVIRONMENTAL IMPACT REPORT will be prepared.

DTSC Project Manager Signature Robert M. Boggs, Jr., P.E.	Title	Telephone #	Date
--	--------------	--------------------	-------------

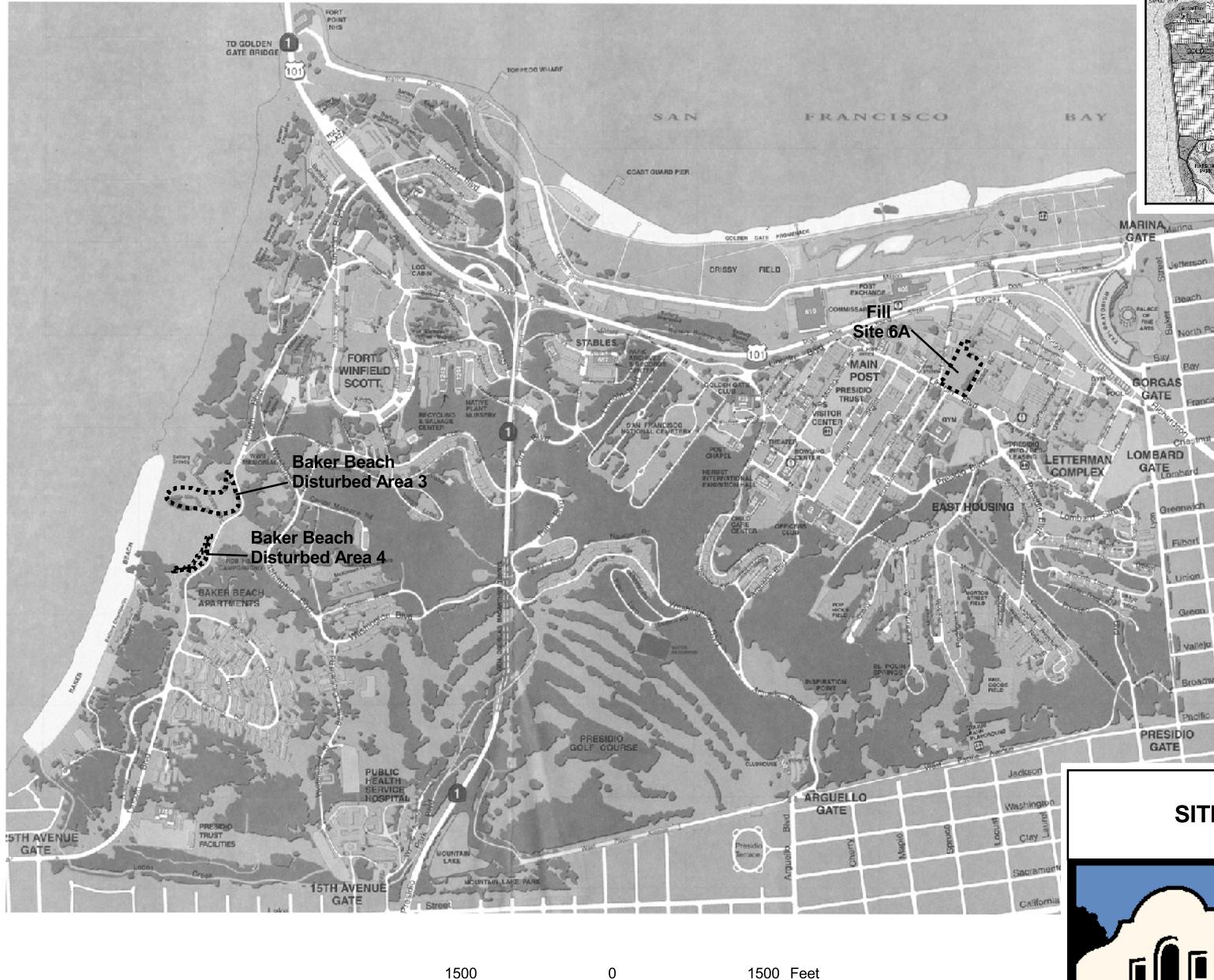
DTSC Branch/ Unit Chief Signature Anthony J. Landis	Title	Telephone #	Date
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ATTACHMENT A

INITIAL STUDY
REFERENCE LIST
for
Remedial Action Plan
Fill Site 6A and Baker Beach Disturbed Areas 3 and 4

1. Bay Area Air Quality Management District, Planning and Research Division, 1996. *CEQA Guidelines, Assessing the Air Quality Impacts of Projects and Plans.* April.
2. California Division of Mines and Geology (CDMG), 2000. *Seismic Hazards Zones, City and County of San Francisco.* CDMG Open File Report 2000-009, 17 November.
3. CDMG - California Department of Conservation, 1988. *Major Faults and Earthquake Epicenters in the San Francisco Bay Area.* International Conference of Building Officials. February.
4. City and County of San Francisco Planning Department, 1995, *Transportation: An Element of the General Plan of the City and County of San Francisco.*
5. Dames & Moore, 1997. *Final Remedial Investigation Report, Presidio Main Installation, Presidio of San Francisco.* January.
6. Erler & Kalinowski, 2002. Revised Final Feasibility Study Report for the Main Installation Sites, Presidio of San Francisco. October (in preparation).
7. Hygienetics Environmental Services, Inc., 2000. *Final Asbestos Operation and Maintenance Program, The Presidio of San Francisco.* May.
8. MACTEC, 2003. *Draft Work Plan to Implement the Remedial Action Plan for Fill Site 6A.* (in preparation).
9. Presidio Trust and NPS, 2001. *Vegetation Management Plan and Environmental Assessment for the Presidio of San Francisco.* May.
10. Presidio Trust and Golden Gate National Recreation Area, 2001. *Presidio of San Francisco Biological Assessment, Draft Presidio Environmental Remediation Plan.* November.
11. Presidio Trust, 2002a. *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco.* May.
12. Presidio Trust, 2002b. *Presidio Trust Management Plan Final Environmental Impact Statement.* May.
13. Presidio Trust, 2002c. *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco, Record of Decision.* August.
14. Schlocker, J. 1974. *Geology of the San Francisco North Quadrangle, California.* United States Geological Survey Professional Paper 782.
15. State of California Air Resource Board, 2001. Resolution 01-28. July
16. Treadwell & Rollo, Inc., 2001. *Field Sampling Plan, Presidio Groundwater Monitoring Project.* April.
17. Treadwell & Rollo, Inc., 2002. *Memorandum to Craig Cooper of the Trust Regarding Slope Stability at Baker Beach Disturbed Area 3.* November.

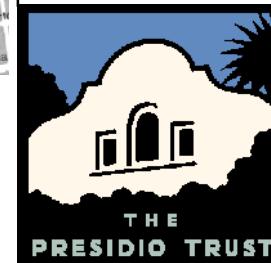
18. Treadwell & Rollo, Inc., 2003a. *Quarterly Groundwater Monitoring Report for the Fourth Quarter 2002, Quarterly Groundwater Monitoring Program, Presidio of San Francisco*. March.
19. Treadwell & Rollo, Inc., 2003b. *Draft Remedial Action Plan for Fill Site 6A and Baker Beach Disturbed Areas 3 and 4*. June.
20. Treadwell & Rollo, Inc., 2003c. *Draft Work Plan to Implement the Remedial Action Plan for Baker Beach Disturbed Areas 3 and 4*. (in preparation).
21. U.S. Department of the Interior, National Park Service (NPS), 1994. *Creating a Park for the 21st Century, from Military Post to National Park - Final General Management Plan Amendment, Presidio of San Francisco, Golden Gate National Park Recreation Area, California*. July.
22. U.S. Department of the Interior Fish and Wildlife Service, 2002. Biological Opinion Letter , Presidio of San Francisco, San Francisco County, California. July.
23. U.S. Geological Survey (USGS), 1978. Historic Ground Failures in Northern California Associated with Earthquakes. Geological Survey Professional Paper 993.
24. USGS, 2000. Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California. U.S. Geological Survey, Denver, CO.



DRAFT



SITE LOCATION MAP



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94129-0052
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April 2003

FIGURE 1

APPENDIX D
Previous Soil and Groundwater Investigation Results
Fill Site 6A

Table D-1
Previously Detected Inorganic Compounds in Soil
Fill Site 6A
 Presidio of San Francisco, California

Sample ID	Depth feet	Date Analytical Method	Aluminum SW6010/B mg/kg	Antimony SW6010/B mg/kg	Arsenic SW6010/B mg/kg	Barium SW6010/B mg/kg	Beryllium SW6010/B mg/kg	Cadmium ¹ SW6010/B mg/kg	Calcium SW6010/B mg/kg	Chromium SW6010/B mg/kg	Cobalt SW6010/B mg/kg	Copper SW6010/B mg/kg	Iron SW6010/B mg/kg	Lead EPA 7421 mg/kg	Magnesium SW6010/B mg/kg	Manganese SW6010/B mg/kg	Mercury EPA 7470 mg/kg	Molybdenum SW6010/B mg/kg	Nickel SW6010/B mg/kg	Potassium SW6010/B mg/kg	Selenium SW6010/B mg/kg	Silver SW6010/B mg/kg	Sodium SW6010/B mg/kg	Thallium SW6010/B mg/kg	Vanadium SW6010/B mg/kg	Zinc ¹ SW6010/B mg/kg
LF6TP100-3COMP	3	2/14/2001	--	< 3.3	3.2	150	0.28	1.3	--	34	6.6	15	--	97	--	--	0.49	< 1.1	42	--	< 0.27	< 0.27	--	< 0.27	25	86
LF6TP101-2COMP	2	2/14/2001	--	< 3.6	2.2	100	0.27	1.2	--	30	6	79	--	68	--	--	0.099	< 1.2	31	--	< 0.28	< 0.28	--	< 0.28	24	73
LF6TP101-3COMP	3	2/14/2001	--	< 3.3	1.8	63	0.28	1.3	--	43	8	7.7	--	19	--	--	0.036	< 1.1	39	--	< 0.28	< 0.28	--	< 0.28	31	30
LF6TP101-6COMP	6	2/14/2001	--	< 3.4	1.2	61	0.3	1	--	43	7.8	5.8	--	9.4	--	--	0.054	< 1.1	27	--	< 0.28	< 0.28	--	0.31	29	21
LF6TP103-3COMP	3	2/14/2001	--	< 3.3	2	72	0.34	1.6	--	56	12	11	--	14	--	--	0.074	< 1.1	61	--	< 0.28	< 0.28	--	< 0.28	39	32
LF6TP103-13COMP	13	2/14/2001	--	< 3.3	2.1	66	0.33	1.6	--	53	9.4	11	--	14	--	--	0.047	< 1.1	49	--	< 0.28	< 0.28	--	< 0.28	38	32
LF6TP104-3COMP	3	2/14/2001	--	< 3.4	1.4	55	0.27	1.3	--	55	8.1	5.6	--	2.9	--	--	< 0.022	< 1.1	57	--	< 0.28	< 0.28	--	< 0.28	32	24
LF6TP104-5.5COMP	5.5	2/14/2001	--	< 3.2	1.8	74	0.35	1.4	--	50	8.6	10	--	8.6	--	--	0.027	< 1.1	52	--	< 0.27	< 0.27	--	< 0.27	32	35
LF6TP104-15COMP	15	2/14/2001	--	< 3.4	1.8	53	0.31	1.4	--	55	7.7	9.7	--	4.5	--	--	0.039	< 1.1	51	--	< 0.28	< 0.28	--	< 0.28	35	25
LF6TP105-3COMP	3	2/14/2001	--	< 3.4	2.4	82	0.3	1.5	--	56	8.6	8.5	--	44	--	--	0.22	< 1.1	55	--	< 0.28	< 0.28	--	< 0.28	35	54
LF6TP105-12COMP	12	2/14/2001	--	< 3.3	1.3	75	0.36	1.4	--	47	8.4	11	--	16	--	--	0.076	< 1.1	46	--	< 0.28	< 0.28	--	< 0.28	35	30
Cleanup Levels²	- Special Status Zone	--	5.0	6.2	320	10	0.8	--	140	21	49	--	160	--	--	0.4	--	12	110	--	0.5	2.0	--	1.0	90	60

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed.

Bold indicates a detection above the cleanup level

Shading indicates Contaminant of Concern (COC)

Light Shading indicates Potential Contaminant of Concern (PCOC)

¹ Cadmium and zinc are retained as Potential Contaminants of Concern (PCOCs); see Section 3.4.2 for explanation.

² Cleanup levels are shown in Section 3.0 of the RAP.

Table D-2
Previously Detected Petroleum and Related Compounds in Soil
Fill Site 6A
 Presidio of San Francisco, California

Sample ID	Depth	Sample Date Analytical Method	TPHg (C7-C12) EPA 8015M	TPHd (C10-C24) EPA 8015M	Benzene mg/kg	Ethylbenzene mg/kg	m,p-Xylenes mg/kg	o-Xylene mg/kg	MTBE mg/kg
	feet		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LF6TP100	3	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP100-3COMP	3	2/14/2001	--	17	--	--	--	--	--
LF6TP101	2	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP101	3	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP101	6	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP101-2COMP	2	2/14/2001	--	43	--	--	--	--	--
LF6TP101-3COMP	3	2/14/2001	--	3.6	--	--	--	--	--
LF6TP101-6COMP	6	2/14/2001	--	1.3	--	--	--	--	--
LF6TP103	2	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP103	3	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP103	8	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP103	13	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP103-3COMP	3	2/14/2001	--	2.8	--	--	--	--	--
LF6TP103-13COMP	13	2/14/2001	--	3.1	--	--	--	--	--
LF6TP104	3	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP104	5.5	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP104	15	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP104-3COMP	3	2/14/2001	--	< 1.1	--	--	--	--	--
LF6TP104-5.5COMP	5.5	2/14/2001	--	4.9	--	--	--	--	--
LF6TP104-15COMP	15	2/14/2001	--	3.1	--	--	--	--	--
LF6TP105	3	2/14/2001	ND	--	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
LF6TP105	12	2/14/2001	ND	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
LF6TP105-3COMP	3	2/14/2001	--	1.6	--	--	--	--	--
LF6TP105-12COMP	12	2/14/2001	--	4.7	--	--	--	--	--
Cleanup Levels¹	- Special Status Zone; Depth to groundwater < 5 feet			100	115	0.005	13	5.7	5.7
	- Special Status Zone; Depth to groundwater > 5 feet			140	144	0.6	15	5.7	5.7

Notes

ND = Not detected; detection limit not available.

-- = Cleanup level not available or sample not analyzed.

¹ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-3
Previously Detected Volatile Organic Compounds in Soil
Fill Site 6A
 Presidio of San Francisco

Sample ID	Depth	Date	1,1,1-	1,4-	Carbon	Trichlorofluoro-	All Other	
			Trichloroethane	Dichlorobenzene	Disulfide	Naphthalene	VOCs ¹	
	feet	Analytical Method	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg	
LF6TP100	3	2/14/2001	< 0.005	< 0.005	< 0.022	< 0.005	< 0.005	
LF6TP101	2	2/14/2001	< 0.005	< 0.005	< 0.022	< 0.005	< 0.005	
LF6TP101	3	2/14/2001	< 0.005	< 0.005	< 0.019	< 0.005	< 0.005	
LF6TP103	2	2/14/2001	< 0.005	< 0.005	< 0.019	< 0.005	< 0.005	
LF6TP103	8	2/14/2001	< 0.005	< 0.005	< 0.018	< 0.005	< 0.005	
LF6TP103	13	2/14/2001	< 0.005	< 0.005	< 0.018	< 0.005	< 0.005	
LF6TP104	3	2/14/2001	< 0.005	< 0.005	< 0.019	< 0.005	< 0.005	
LF6TP104	5.5	2/14/2001	< 0.005	< 0.005	< 0.018	< 0.005	< 0.005	
LF6TP104	15	2/14/2001	< 0.005	< 0.005	< 0.019	< 0.005	< 0.005	
LF6TP105	3	2/14/2001	< 0.004	< 0.004	< 0.019	< 0.004	< 0.004	
LF6TP105	8	2/14/2001	< 0.005	< 0.005	< 0.019	< 0.005	< 0.005	
LF6TP105	12	2/14/2001	< 0.005	< 0.005	< 0.017	< 0.005	< 0.005	
Cleanup Levels²	- Special Status Zone; Depth to groundwater		8.0	0.13	0.24	200	40	--
	< 5 feet							
	- Special Status Zone; Depth to groundwater		8.0	0.13	0.24	200	9	40
	> 5 feet							--

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

ND = Not detected; detection limits vary

¹ Fifty (50) other volatile organic compounds (VOCs) for which no cleanup levels are available were quantitated; none were present above detectable levels.

² Cleanup levels are shown in Section 3.0 of the RAP.

Table D-4
Previously Detected Semi-volatile Organic Compounds in Soil
Fill Site 6A
 Presidio of San Francisco

Sample ID	Depth	Date	Analytical Method									
			1,4-Dichlorobenzene ¹	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene ¹	Benzo(a)pyrene ¹	Benzo(b)fluoranthene ¹	Benzo(g,h,i)perylene	Benzo(k)fluoranthene ¹
	feet		SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg
LF6TP100-3COMP	3	2/14/2001	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390
LF6TP101-2COMP	2	2/14/2001	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400
LF6TP101-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP101-6COMP	6	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP103-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP103-13COMP	13	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP104-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP104-5.5COMP	5.5	2/14/2001	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370
LF6TP104-15COMP	15	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
LF6TP105-3COMP	3	2/14/2001	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370
LF6TP105-12COMP	12	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380
Cleanup Levels³	- Special Status Zone		0.13	30	30	30	30	0.27	0.027	0.27	30	0.27

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available

¹ Historical detection limits exceed one or more cleanup levels for indicated compounds.

² Forty nine (49) other semi-volatile organic compounds (SVOCs) for which no cleanup levels are available were quantitated; none were present above detectable levels.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-4
Previously Detected Semi-volatile Organic Compounds in Soil
Fill Site 6A
Presidio of San Francisco

Sample ID	Depth	Date	Indeno(1,2,3-cd)											
			Benzyl Alcohol	Dibenz(a,h)anthracene ¹	Dibenzofuran	Fluoranthene	Fluorene	-pyrene ¹	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	All Other SVOCs ²
			SW8270 feet	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg	SW8270 mg/kg
LF6TP100-3COMP	3	2/14/2001	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 0.390	< 1.9	< 0.390	< 0.390	< 0.390	ND
LF6TP101-2COMP	2	2/14/2001	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 2.0	< 0.400	< 0.400	< 0.400	ND
LF6TP101-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
LF6TP101-6COMP	6	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
LF6TP103-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
LF6TP103-13COMP	13	2/14/2001	< 0.380	< 0.380	< 0.380	0.40	< 0.380	< 0.380	< 0.380	< 1.9	0.39	< 0.380	< 0.380	ND
LF6TP104-3COMP	3	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
LF6TP104-5.5COMP	5.5	2/14/2001	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 1.9	< 0.370	< 0.370	< 0.370	ND
LF6TP104-15COMP	15	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
LF6TP105-3COMP	3	2/14/2001	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 0.370	< 1.9	< 0.370	< 0.370	< 0.370	ND
LF6TP105-12COMP	12	2/14/2001	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 0.380	< 1.9	< 0.380	< 0.380	< 0.380	ND
Cleanup Levels³	- Special Status Zone		1	0.078	--	30	30	0.27	9	3	30	30	30	--

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available

¹ Historical detection limits exceed one or more cleanup levels for indicated compounds.

² Forty nine (49) other semi-volatile organic compounds (SVOCs) for which no cleanup levels are available were quantitated; none were present above detectable levels.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-5
Previously Detected Pesticides, Herbicides, and PCBs in Soil
Fill Site 6A
 Presidio of San Francisco, California

Sample ID	Depth	Date	Endosulfan													
			Methoxychlor	4,4'-DDD ¹	4,4'-DDE	4,4'-DDT ¹	Aldrin ¹	alpha-BHC	beta-BHC	Camphechlor	Chlordane ¹	delta-BHC	Dieldrin ¹	Endosulfan I	Endosulfan II	
	feet	Analytical Method	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	SW8080 mg/kg	
LF6TP100-3COMP	3	2/14/2001	< 0.035	< 0.069	< 0.069	< 0.069	< 0.035	< 0.035	< 0.035	< 0.069	< 0.035	< 0.035	< 0.069	< 0.035	< 0.069	
LF6TP101-2COMP	2	2/14/2001	< 0.036	< 0.072	0.097	< 0.072	< 0.036	< 0.036	< 0.036	< 0.072	< 0.036	< 0.036	< 0.072	< 0.036	< 0.072	
LF6TP101-3COMP	3	2/14/2001	< 0.034	< 0.068	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.068	< 0.034	< 0.034	< 0.068	< 0.034	< 0.068	
LF6TP101-6COMP	6	2/14/2001	< 0.034	< 0.067	< 0.067	< 0.067	< 0.034	< 0.034	< 0.034	< 0.067	< 0.034	< 0.034	< 0.067	< 0.034	< 0.067	
LF6TP103-3COMP	3	2/14/2001	< 0.034	< 0.067	< 0.067	< 0.067	< 0.034	< 0.034	< 0.034	< 0.067	< 0.034	< 0.034	< 0.067	< 0.034	< 0.067	
LF6TP103-13COMP	13	2/14/2001	< 0.034	< 0.068	< 0.068	0.120	< 0.034	< 0.034	< 0.034	< 0.068	< 0.034	< 0.034	< 0.068	< 0.034	< 0.068	
LF6TP104-3COMP	3	2/14/2001	< 0.033	< 0.067	< 0.067	< 0.067	< 0.033	< 0.033	< 0.033	< 0.067	< 0.033	< 0.033	< 0.067	< 0.033	< 0.067	
LF6TP104-5.5COMP	5.5	2/14/2001	< 0.033	< 0.066	< 0.066	< 0.066	< 0.033	< 0.033	< 0.033	< 0.066	< 0.033	< 0.033	< 0.066	< 0.033	< 0.066	
LF6TP104-15COMP	15	2/14/2001	< 0.034	< 0.068	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.068	< 0.034	< 0.034	< 0.068	< 0.034	< 0.068	
LF6TP105-3COMP	3	2/14/2001	< 0.034	< 0.069	< 0.069	< 0.069	< 0.034	< 0.034	< 0.034	< 0.069	< 0.034	< 0.034	< 0.069	< 0.034	< 0.069	
LF6TP105-12COMP	12	2/14/2001	< 0.034	< 0.068	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.068	< 0.034	< 0.034	< 0.068	< 0.034	< 0.068	
Cleanup Levels²	- Special Status Zone		0.44	0.049	0.098	0.0082	0.0039	0.062	0.062	--	0.0090	0.062	0.030	1.1	1.1	1.1

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

Bold indicates a detection above the cleanup level

Shading indicates Contaminant of Concern (COC)

¹ Historical detection limits exceed one or more cleanup levels for indicated compounds.

² Cleanup levels are shown in Section 3.0 of the RAP.

Table D-5
Previously Detected Pesticides, Herbicides, and PCBs in Soil
Fill Site 6A
 Presidio of San Francisco, California

Sample ID	Depth	Date	Endrin	gamma-	gamma-	Heptachlor	Heptachlor	PCB-1260	PCB-1016 ¹	PCB-1221 ¹	PCB-1232 ¹	PCB-1242 ¹	PCB-1248 ¹	PCB-1254 ¹
			Endrin ¹	aldehyde ¹	BHC ¹	Chlordane	Heptachlor ¹							
		Analytical Method	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080	SW8080
		feet	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LF6TP100-3COMP	3	2/14/2001	< 0.069	< 0.069	< 0.035	< 0.035	< 0.035	< 0.035	< 0.014	< 0.014	< 0.028	< 0.014	< 0.014	< 0.014
LF6TP101-2COMP	2	2/14/2001	< 0.072	< 0.072	< 0.036	< 0.036	< 0.036	< 0.036	< 0.014	< 0.014	< 0.029	< 0.014	< 0.014	< 0.014
LF6TP101-3COMP	3	2/14/2001	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.034	< 0.014	< 0.014	< 0.027	< 0.014	< 0.014	< 0.014
LF6TP101-6COMP	6	2/14/2001	< 0.067	< 0.067	< 0.034	< 0.034	< 0.034	< 0.034	< 0.013	< 0.013	< 0.027	< 0.013	< 0.013	< 0.013
LF6TP103-3COMP	3	2/14/2001	< 0.067	< 0.067	< 0.034	< 0.034	< 0.034	< 0.034	< 0.013	< 0.013	< 0.027	< 0.013	< 0.013	< 0.013
LF6TP103-13COMP	13	2/14/2001	< 0.068	0.075	< 0.034	< 0.034	< 0.034	< 0.034	0.920	< 0.068	< 0.140	< 0.068	< 0.068	< 0.068
LF6TP104-3COMP	3	2/14/2001	< 0.067	< 0.067	< 0.033	< 0.033	< 0.033	< 0.033	< 0.013	< 0.013	< 0.027	< 0.013	< 0.013	< 0.013
LF6TP104-5.5COMP	5.5	2/14/2001	< 0.066	< 0.066	< 0.033	< 0.033	< 0.033	< 0.033	0.092	< 0.013	< 0.027	< 0.013	< 0.013	< 0.013
LF6TP104-15COMP	15	2/14/2001	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.034	0.029	< 0.014	< 0.027	< 0.014	< 0.014	< 0.014
LF6TP105-3COMP	3	2/14/2001	< 0.069	< 0.069	< 0.034	< 0.034	< 0.034	< 0.034	1.4	< 0.069	< 0.140	< 0.069	< 0.069	< 0.069
LF6TP105-12COMP	12	2/14/2001	< 0.068	< 0.068	< 0.034	< 0.034	< 0.034	< 0.034	< 0.014	< 0.014	< 0.027	< 0.014	< 0.014	< 0.014
Cleanup Levels ²	- Special Status Zone		0.004	0.004	0.004	0.12	0.017	0.017	0.033	0.033	0.033	0.033	0.033	0.033

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

Bold indicates a detection above the cleanup level

Shading indicates Contaminant of Concern (COC)

¹ Historical detection limits exceed one or more cleanup levels for indicated compounds.

² Cleanup levels are shown in Section 3.0 of the RAP. To determine applicable cleanup level, refer to land use designation on this table for each sample.

Table D-6
Previously Detected Inorganic Compounds in Groundwater
Fill Site 6A
Presidio of San Francisco, California

Well Name	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Chromium (IV)	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury ²	Nickel	Potassium	Selenium ³	Silver	Sodium	Thallium	Vanadium	Zinc ³	Total Dissolved Solids
	Analytical Method ¹	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6010/ SW6020	SW6020	EPA 7196A	SW6020	SW6020	SW6020	SW6020	SW6020	SW7470	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	SW6020	E160.1	
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)
LF6GW102	12/11/2002	< 100	< 1	2.9	240 J+	< 1	< 1	81,000 J	< 1	NA	< 1	< 1	14,000	< 3	81,000 J	6,300	< 0.2	2.7	2,500 J	< 5	< 1 UJ	53,000 J	< 1	< 10	< 10	620
	9/5/2002	< 100	< 1	3.3	540	< 1	< 1	82,000	5.4	NA	< 1	< 1	16,000	< 3	81,000	6,300	< 0.2	2.5	2,500	< 5	< 1 UJ	59,000	< 1	< 10	52	670 J-
DUP0313021A	6/6/2002	< 100	< 1.0	3.1	520	< 1.0	< 1.0	99,000	4.1	NA	< 1	< 1	14,000	< 3	76,000	5,800	< 0.2	1.9	2,500	< 5	< 1	58,000	< 1	< 10	61	680
	3/13/2002	< 100	2.2	2.7	870	< 1	< 1	110,000	1.5	NA	< 1	< 1	10,000	< 3	99,000	6,200	< 0.2	4.1	2,600	< 5	< 1 UJ	88,000	< 1	< 10	190	820
DUP12030113A	3/13/2002	< 100	< 1	2.6	380	< 1	< 1	110,000	1.5	NA	< 1	< 1	10,000	< 3	95,000	6,600	< 0.2	3.9	2,400	< 5	< 1 UJ	81,000	< 1	< 10	20	840
	12/3/2001	< 100	< 1	2.8	290	< 1	< 1	74,000	1.7	NA	< 1	< 1	14,000	< 3	88,000	5,300	< 0.2	4.7	2,400	< 5	< 1	58,000	< 1	< 10	12	630
DUP12030113A	12/3/2001	< 100	< 1	2.8	520	< 1	< 1	75,000	1.2	NA	< 1	1.1	14,000	< 3	93,000	5,400	< 0.2	3.9	2,400	< 5	< 1	61,000	< 1	< 10	52	640
	9/7/2001	< 100	< 1	2.5	560 J+	< 1	< 1	83,000	< 1	< 1	< 1	< 1	14,000	< 3	89,000	5,900	< 0.2	5	2,000	< 5	< 1 UJ	62,000	< 1	< 10	84	NA
LF6GW103	5/18/01	< 100	1.5	2.9	450	< 1	< 1	81,000	1	NA	< 1	1.3	14,000	< 3	77,000	6300	< 0.2	5.4	2,500	< 5	< 1 UJ	62,000	< 1	< 10	62	710
	7/19/00	NA	< 60	< 5	110	< 2	< 5	NA	< 10	NA	< 20	< 10	NA	< 3	NA	NA	< 0.2	< 20	NA	6.2	< 5	NA	< 5	< 10	90	NA
LF6GW103 DUP	12/6/2002	< 100	< 1	< 1	86	< 1	< 1	46,000	33	NA	< 1	1.1	130	< 3	69,000	< 10 UJ	< 0.2	7.2	570	< 5	< 1 UJ	76,000	< 1	< 10	< 10	650
	9/5/2002	< 100	1.4	< 1	410	< 1	< 1	47,000	34	NA	< 1	< 1	100	< 3	73,000	< 10	< 0.2	7.1	770	< 5	< 1 UJ	82,000	< 1	< 10	130	630 J-
	6/5/2002	< 100	< 1.0	< 1.0	400	< 1.0	< 1.0	48,000	34	NA	< 1.0	< 1.0	180	< 3.0	76,000	< 10	< 0.20	7.1	780	< 5.0	< 1.0	82,000	< 1.0	< 10	130	640
	3/13/2002	< 100	< 1	< 1	410	< 1	< 1	48,000	30	NA	< 1	< 1	140	< 3	75,000	< 10	< 0.2	6.7	780	< 5	< 1 UJ	84,000	< 1	< 10	96	650
	12/4/2002	< 100	1.6	< 1	620	< 1	< 1	53,000	37J	NA	< 1	9.9	< 100	< 3	80,000	< 10	< 0.2	9.5 J	1,300	< 5	< 1	92,000	< 1	< 10	260	680
	8/29/2001	< 100	1	< 1	750 J+	< 1	< 1	44,000	36	< 1	< 1	1.5	200	< 3	74,000	< 10	< 0.2	7.1	940	< 5	< 1 UJ	82,000	< 1	< 10	170	NA
	5/17/01	< 100	< 1	< 1	170	< 1	< 1	< 500 R	35 J	NA	< 1	< 1	330	< 3	270,000	< 10	< 0.2	6.5	690 J	< 5	< 1	300,000	< 1	< 10	20	610
	7/19/00	NA	< 60	< 5	58	< 2	< 5	NA	27	NA	< 20	< 10	NA	< 3	NA	NA	< 0.2	< 20	NA	< 5	NA	< 5	< 10	< 20	NA	
	7/19/00	NA	< 60	< 5	59	< 2	< 5	NA	28	NA	< 20	< 10	NA	< 3	NA	NA	< 0.2	< 20	NA	< 5	NA	< 5	< 10	< 20	NA	
Cleanup Levels⁴		--	6	10	1,000	4	1.1	--	50	11	--	11.8	--	3.2	--	--	0.012	100	--	5	4.1	--	1.7	--	106	--

Notes

µg/L = micrograms per liter

-- = Cleanup level not available

NA = Not analyzed

Bold indicates a detection above the cleanup level

Light shading indicates Potential Contaminant of Concern (PCOC)

Table D-9 identifies current and historic data qualifiers.

¹ The identified analytical method(s) are for analyses performed beginning in the second quarter of 2001. The analytical methods used during previous quarters are identified in their respective quarterly report.

² All historical detection limits exceed cleanup criteria for mercury. However, mercury is not retained as a COC because it is not likely to have been released into the environment as a result of historical site uses (EKI, 2003). In addition, 0.2 mg/L is the lowest available laboratory reporting limit for mercury. Nevertheless, mercury will continue to be monitored for an additional four (4) quarters.

³ Selenium and zinc are retained as PCOCs; see Section 3.4.2.2 for explanation.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-7
Previously Detected Petroleum and Related Constituents in Groundwater
Fill Site 6A
Presidio of San Francisco, California

Well Name	Sample Date	TPHg (C7-C12)	TPHd (C12-C24)	TPHmo (C24-C36)	TPHfo ² (C12-C50)	Benzene	Ethyl-benzene	MTBE	M,P-Xylenes	O-Xylenes	Total Xylenes	Toluene	All Other VOCs
	Analytical Method ¹	SW8015M	SW8015M	SW8015M	SW8015M	SW8260M	SW8260M	SW8260M	SW8260M	SW8260M	SW8260M	SW8260M	SW8260B/M
		(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
1027MW01	7/17/2000	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/6/1996	NA	<47	NA	<280	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	2/13/1996	<50	<51	NA	<310	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	11/10/1995	NA	<50	NA	<1300	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	8/16/1995	NA	<50	NA	<1300	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	6/13/1995	NA	NA	NA	NA	<0.5	<0.5	NA	<0.5	<0.5	<0.5	<0.50	NA
1027MW03	7/17/2000	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/6/1996	NA	<49	NA	<290	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	2/14/1996	NA	<52	NA	<310	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	11/10/1995	NA	<50	NA	<1300	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	8/18/1995	NA	<50	NA	<1300	<0.5	<0.5	NA	<0.5	<0.5	NA	<0.5	NA
	6/13/1995	NA	NA	NA	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	NA
231GW09	12/4/2002	<50	<50	<300	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	<0.5	ND
	8/30/2002	<50	<50	<300	NA	<0.5	<0.5	<2	NA	NA	<0.5	<0.5	ND
	5/30/2002	<50	170 Y	610	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	<0.5	ND
	3/7/2002	<50	<50 UJ	<300 UJ	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	<0.5	ND
	11/29/2001	<50	<50	<300 ³	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	<0.5	ND
	8/30/2001	<50	<50 ³	<300	NA	<0.5	<0.5	<0.5	NA	NA	<0.5	<0.5	ND
	5/9/2001	<50	<50	<300	NA	<0.5	<0.5	<0.5 UJ	NA	NA	<0.5	<0.5	ND
	4/14/1999	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	1/13/1999	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	10/14/1998	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	7/15/1998	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	4/20/1998	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	1/28/1998	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	10/23/1997	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	7/24/1997	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	4/22/1997	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	1/28/1997	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	10/9/1996	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	7/12/1996	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	0.54	ND
	5/1/1996	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	2/8/1996	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	11/7/1995	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	8/10/1995	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<2.7	ND
	4/18/1995	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	1/23/1995	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	11/10/1994	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	8/18/1994	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	4/27/1994	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	2/4/1994	<50	<50	<300	NA	<0.5	<0.5	NA	NA	NA	<0.5	<0.5	ND
	10/27/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
	7/27/1993	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND

Table D-7
Previously Detected Petroleum and Related Constituents in Groundwater
Fill Site 6A
 Presidio of San Francisco, California

Well Name	Sample Date	TPHg (C7-C12)	TPHd (C12-C24)	TPHmo (C24-C36)	TPHfo ² (C12-C50)	Benzene	Ethyl-benzene	MTBE	M,P-Xylenes	O-Xylenes	Total Xylenes	Toluene	All Other VOCs
	Analytical Method ¹	SW8015M (µg/L)	SW8015M (µg/L)	SW8015M (µg/L)	SW8015M (µg/L)	SW8260M (µg/L)	SW8260B/M (µg/L)						
LF6GW102	12/11/2002	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/5/2002	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/6/2002	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DUP0313021A	3/13/2002	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DUP12030113A	3/13/2002	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/3/2001	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LF6GW103	12/3/2001	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/7/2001	<50	57 Y,NJ ³	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/18/01	<50	<50	<300	<300	NA							
	7/19/2000	<50	<50	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cleanup Levels⁴		443	880	1,200	1,200	1.0	700	13	--	--	318	150	Various

Notes

TPH = Total Petroleum Hydrocarbons

µg/L = micrograms per liter

NA = Not analyzed

-- = Cleanup level not available

"CL" suffix denotes a Quality Control Duplicate Sample was sent to Chromalab.

Bold indicates a detection above the cleanup level

Table D-9 identifies current and historic data qualifiers.

¹ The identified analytical method(s) are for analyses performed beginning in the second quarter of 2001. The analytical methods used during previous quarters are identified in their respective quarterly report.

² TPH as Fuel Oil used a bunker C standard for analyses performed in the second quarter of 2001. The Fuel Oil Standard used during previous quarters are identified in their respective quarterly report.

³ TPH analysis was not run using silica gel cleanup method 3630A although it was marked on the chain of custody.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-8
Previously Detected PAHs, OCPs, PCBs, and Dissolved Oxygen in Groundwater
Fill Site 6A
 Presidio of San Francisco, California

Well Name	Sample Date	Dissolved Oxygen	PAHs					OCPs and PCBs	
			Benzo(b)-Fluoranthene ²	Fluoranthene	Chrysene	Benzo(a)-anthracene	All Other PAHs	Dieldrin ³	All Other OCPs and PCBs
Analytical Method ¹	Field	SW8301	SW8301	SW8301	SW8301	SW8301	SW8270	SW8081	SW8080
	(mg/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
LF6GW102	12/11/2002	0.2	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.094	ND
	9/5/2002	1	<0.19	< 0.38	< 0.09	< 0.09	ND	< 0.094	ND
	6/6/2002	0.6	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.094	ND
DUP0313021A	3/13/2002	1.8	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.096	ND
	3/13/2002	1.8	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.096 UJ	ND
DUP12030113A	12/3/2001	1.4	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.095	ND
	12/3/2001	1.4	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.095	ND
	9/7/2001	0.8	< 0.2	< 0.4	< 0.1	< 0.1	ND	< 0.096 UJ	ND
	5/18/01	1.2	< 0.33	< 0.67	< 0.17	< 0.17	ND	< 0.13 UJ	ND
	7/19/00	2.92	< 9.6	< 9.6	< 9.6	< 9.6	ND	< 0.094	ND
LF6GW103	12/6/2002	5.5	< 0.19	< 0.39	< 0.1	< 0.1	ND	< 0.098	ND
	9/5/2002	2.4	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.099	ND
	6/5/2002	0.8	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.094	ND
	3/13/2002	3.2	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.096	ND
	12/4/2002	1.0	< 0.19	< 0.38	< 0.1	< 0.1	ND	< 0.096	ND
	8/29/2001	3.0	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.094 UJ	ND
	5/17/01	5.2	< 0.19	< 0.38	< 0.09	< 0.09	ND	< 0.096 UJ	ND
	7/19/00	2.45	< 9.7	< 9.7	< 9.7	< 9.7	ND	< 0.094	ND
Cleanup Levels ⁴	--	0.0044	300	0.0044	0.0044	various	0.00014	various	

Notes

mg/L = milligrams per liter

μg/L = micrograms per liter

-- = Cleanup level not available

ND = Not detected; detection limits vary

PAHs = Polycyclic Aromatic Hydrocarbons

OCPs = Organochlorine Pesticides

PCBs = Polychlorinated Biphenyls

¹ The identified analytical method(s) are for analyses performed beginning in the second quarter 2001. The analytical methods used during previous quarters are identified in their respective quarterly reports.

² Four PAHs were detected at concentrations exceeding cleanup levels at well LF6GW100. However, they are not retained as COCs because a) they have not been detected in the previous 4 rounds of sampling, b) they have not been detected at any other FS 6 wells, and c) well LF6GW100 is located 400 feet away (cross-gradient) from the Tennessee Hollow Riparian Corridor (EKI, 2003).

³ Dieldrin was detected at a concentration exceeding the cleanup level in one duplicate sample from well LF6GW100. However, it is not retained as a COC because a) dieldrin was not detected in two other samples collected from the same well during the same sampling round, b) it was not detected in any other wells, and c) well LF6GW100 is located 400 feet away (cross-gradient) from the Tennessee Hollow Riparian Corridor (EKI, 2003).

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table D-9
Laboratory Qualifiers for Current and Historical Analytical Data
Fill Site 6A
Presidio of San Francisco, California

The following data validation qualifiers were used, as recommended in the October 1999 document titled *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*:

- U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample; "+" indicates value is biased high; "-" indicates value is biased low.
- R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.
- NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
- UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

The reported analytical data also includes the following laboratory supplied validation comments:

- Y Sample exhibits a fuel pattern that does not resemble standard
- Z Sample exhibits unknown single peaks or peaks

APPENDIX E
Previous Soil and Surface Water Investigation Results
Baker Beach Disturbed Area 3

Table E-1
Previously Detected Inorganic Compounds in Soil
Baker Beach Disturbed Area 3
 Presidio of San Francisco, California

Sample ID	Depth feet	Sample Date Analytical Method	Aluminum	Antimony	Arsenic ¹	Barium	Beryllium	Cadmium	Calcium	Chromium ²	Cobalt	Copper ²	Cyanide	Iron	Lead	Lead
			EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	9010 mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	XRF mg/kg
BBSB11	0	8/5/1992	4,100	< 41.3	2.78	13.3	0.547	< 0.515	3,050	39.2	16.4	5.92	< 0.92	9,700	6.0	--
BBSB11	2	8/5/1992	4,110	< 41.3	2.81	16.2	0.558	< 0.515	2,740	38.4	16.2	7.21	< 0.92	9,500	9.95	--
BBSB12	0	8/6/1992	11,000	156 R	1.14	47.5	< 0.5	5.44	14,000	1,590	279	46.8	< 0.92	90,000	77	--
BBSB12	2	8/6/1992	11,000	< 41.3	5.16	145	0.958	1.23	4,640	67.1	55.2	39.9	< 0.92	51,000	1.09	--
BBSB13	0	8/6/1992	7,700	< 41.3	4.74	74.9	0.914	1.10	6,900	74.8	25.5	30.3	< 0.92	18,000	240	--
BBSB13	2	8/6/1992	7,500	< 41.3	2.47	84.3	1.020	< 0.515	4,340	89.4	28.0	21.6	< 0.92	21,000	180	--
BBSB14	0	8/7/1992	12,000	51 R	4.61	86.4	0.800	0.911	8,900	277	49.1	31.1	< 0.92	27,000	350	--
BBSB14	2	8/7/1992	11,000	< 41.3	3.92	110	0.883	0.945	4,600	69.7	32.5	37.7	< 0.92	25,000	1,000	--
BBSB15	0	8/11/1992	5,200	< 41.3	3.31	50.8	0.812	< 0.515	4,530	51.2	20.5 ³	15.9	< 0.92	15,000	20	--
BBSB15	2	8/11/1992	5,700	< 41.3	3.17	63.6	0.983	< 0.515	4,350	53.9	20.0	11.5	< 0.92	14,000	12	--
BBSB27	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	252
BBSB27	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	< 25
BBSB28	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	204
BBSB28	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	182
BBSB29	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	164
BBSB29	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	140
BBSB30	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	< 25
BBSB30	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	--	< 25
BB3SB100	0.5	7/17/2000	--	< 3	7.0	42	0.14	1.3	--	31	7.0	12	--	--	71	--
BB3SB100	1.5	7/17/2000	--	< 3	5.3	38	0.13	1.2	--	29	5.4	9	--	--	30	--
BB3SB101	0.5	7/17/2000	--	< 2.9	2.5	18	0.11	1.0	--	33	5.4	3.5	--	--	5.2	--
BB3SB101	2	7/17/2000	--	< 3	2.3	16	0.11	0.89	--	26	4.7	3.2	--	--	1.7	--
BB3SB102	0.5	7/17/2000	--	< 3.1	2.4	13	0.12	0.97	--	28	5.1	3	--	--	4.3	--
BB3SB102	2	7/17/2000	--	< 3	2.3	12	0.12	0.85	--	29	4.5	2.7	--	--	2.4	--
Cleanup Levels (Serpentinite)⁴			--	5.0	5.4	320	10	1.9	--	1,700	170	85	1,000	--	160	160
Cleanup Levels (Colma)⁴			--	5.0	6.2	320	10	1.7	--	140	21	49	1,000	--	160	160
Cleanup Levels (Beach/Dune Sand)⁴			--	5.0	5.9	320	10	1.7	--	120	20	43	1,000	--	160	160

Notes

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence

Bold indicates a detection above the cleanup level

Shading indicates Contaminant of Concern

-- = Cleanup level not available or sample not analyzed

R = Rejected data (EKI, 2001a)

¹ Arsenic is not retained as a COC because concentrations are within the range of distributions expected for serpentinite or beach/dune sand, based on a review of the bivariate scatter plots (EKI, 2001b).

² Chromium, copper, and nickel are not retained as COCs because the lithology is considered a mixture of beach/dune sand and serpentinite (EKI, 2003).

³ Boring BBSB15 is located in a serpentinite area. Therefore, cobalt is not considered a COC at that location.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-1
Previously Detected Inorganic Compounds in Soil
Baker Beach Disturbed Area 3
 Presidio of San Francisco, California

Sample ID	Depth	Sample Date	Magnesium EPA 6010/B mg/kg	Manganese EPA 6010/B mg/kg	Mercury EPA 6010/B mg/kg	Molybdenum EPA 6010/B mg/Kg	Nickel ² EPA 6010/B mg/kg	Potassium EPA 6010/B mg/kg	Selenium EPA 6010/B mg/kg	Silver EPA 6010/B mg/kg	Sodium EPA 6010/B mg/kg	Thallium EPA 6010/B mg/kg	Vanadium EPA 6010/B mg/kg	Zinc EPA 6010/B mg/kg	Zinc XRF mg/kg
	feet	Analytical Method													
BBSB11	0	8/5/1992	2,110	130	< 0.027	--	24.6	452	< 0.25	0.732	194	33.8 R	32.5	24.6	--
BBSB11	2	8/5/1992	3,670	128	< 0.027	--	29.2	405	< 0.25	0.682	207	33.7 R	30.1	45.4	--
BBSB12	0	8/6/1992	130,000	1,240	0.048	--	4,300	< 119	< 0.25	< 0.521	1,390	355 R	65.2	64	--
BBSB12	2	8/6/1992	3,390	595	0.301	--	68.3	1,060	< 0.25	< 0.521	224	197 R	59.5	376	--
BBSB13	0	8/6/1992	5,230	351	0.176	--	69.0	648	< 0.25	< 0.521	148	68.7 R	47.1	124	--
BBSB13	2	8/6/1992	8,800	292	0.036	--	92.7	484	< 0.25	< 0.521	154	86.5 R	57.3	57.7	--
BBSB14	0	8/7/1992	37,000	510	0.049	--	427	1,110	< 0.25	< 0.521	232	118 R	54.5	134	--
BBSB14	2	8/7/1992	4,140	525	0.080	--	61.7	857	< 0.25	< 0.521	155	89.3 R	59.9	2,900	--
BBSB15	0	8/11/1992	2,770	298	0.030	--	40.0	567	0.362	< 0.521	185	51.7 R	50	29.8	--
BBSB15	2	8/11/1992	3,060	205	0.027	--	43.5	455	< 0.25	< 0.521	180	63.1 R	46.4	27.7	--
BBSB27	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	99.6
BBSB27	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	92.1	< 36
BBSB28	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	144
BBSB28	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	547
BBSB29	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	110
BBSB29	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	241
BBSB30	0	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	< 36
BBSB30	2.7	12/8/1994	--	--	--	--	--	--	--	--	--	--	--	--	< 36
BB3SB100	0.5	7/17/2000	--	--	0.25	< 0.99	27	--	0.42	< 0.25	--	0.35	22	65	--
BB3SB100	1.5	7/17/2000	--	--	0.12	< 1	28	--	0.32	< 0.25	--	0.41	23	38	--
BB3SB101	0.5	7/17/2000	--	--	< 0.02	< 0.98	25	--	0.25	< 0.25	--	0.42	23	18	--
BB3SB101	2	7/17/2000	--	--	< 0.02	< 1	21	--	< 0.25	< 0.25	--	0.29	20	14	--
BB3SB102	0.5	7/17/2000	--	--	< 0.02	< 1	23	--	< 0.26	< 0.26	--	0.28	22	18	--
BB3SB102	2	7/17/2000	--	--	< 0.02	< 1	21	--	< 0.25	< 0.25	--	< 0.25	19	15	--
Cleanup Levels (Serpentinite)⁴			--	--	0.4	12	4,500	--	0.5	2.0	--	1.0	74	160	160
Cleanup Levels (Colma)⁴			--	--	0.4	12	110	--	0.5	2.0	--	1.0	90	60	60
Cleanup Levels (Beach/Dune Sand)⁴			--	--	0.4	12	70	--	0.75	2.0	--	1.0	92	66	66

Notes

mg/kg = milligrams per kilogram

XRF = X-Ray Fluorescence

Bold indicates a detection above the cleanup level.

Shading indicates Contaminant of Concern

-- = Cleanup level not available or sample not analyzed

R = Rejected data (EKI, 2001a)

¹ Arsenic is not retained as a COC because concentrations are within the range of distributions expected for serpentinite or beach/dune sand, based on a review of the bivariate scatter plots (EKI, 2001a).

² Chromium, copper, and nickel are not retained as COCs because the lithology is considered a mixture of beach/dune sand and serpentinite (EKI, 2003).

³ Boring BBSB15 is located in a serpentinite area. Therefore, cobalt is not considered a COC at that location.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-2
Previously Detected Petroleum and Related Compounds in Soil
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Depth	Sample Date	TPHg Analytical Method	TPHd EPA 8015M mg/kg	TPHd EPA 8015M mg/kg	TPH-purgeable quantitated as gas EPA 8015M mg/kg	Benzene EPA 8260B mg/kg	Ethylbenzene EPA 8260B mg/kg	m- and p-Xylenes EPA 8260B mg/kg	o-Xylene EPA 8260B mg/kg	Naphthalene EPA 8260B mg/kg
<i>Carbon Ranges, 1992</i>											
BBSB11	0	8/5/1992	(not available)	(not available)	--	6	< 1	--	--	--	< 0.033
BBSB11	2	8/5/1992	--	--	5	< 1	--	--	--	--	< 0.033
BBSB12	0	8/6/1992	--	--	15	< 1	--	--	--	--	< 0.033
BBSB12	2	8/6/1992	--	--	5	< 1	--	--	--	--	< 0.033
BBSB13	0	8/6/1992	--	--	10	< 1	--	--	--	--	< 0.2
BBSB13	2	8/6/1992	--	--	15	< 1	--	--	--	--	< 0.033
BBSB14	0	8/7/1992	--	--	50	< 1	--	--	--	--	< 0.033
BBSB14	2	8/7/1992	--	--	21	< 1	--	--	--	--	< 0.033
BBSB15	0	8/11/1992	--	--	30	< 1	--	--	--	--	< 0.033
BBSB15	2	8/11/1992	--	--	7	< 1	--	--	--	--	< 0.033
<i>Carbon Ranges, 2000</i>											
BB3SB100	0.5	7/17/2000	(C7-C12)	(C12-C24)	< 0.25	18	--	< 0.006	< 0.006	< 0.006	< 0.006
BB3SB100	1.5	7/17/2000	< 0.23	< 0.23	7.8	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
BB3SB101	0.5	7/17/2000	< 0.4	< 0.4	1.1	--	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
BB3SB101	2	7/17/2000	< 0.2	< 0.2	< 1	--	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
BB3SB102	0.5	7/17/2000	< 0.33	< 0.33	1.8	--	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
BB3SB102	2	7/17/2000	< 0.23	< 0.23	< 1	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Cleanup Levels (Serpentinite)¹			610	700	--		0.6	60	55	55	30
Cleanup Levels (Colma)¹			610	700	--		0.6	60	55	55	30
Cleanup Levels (Beach/Dune Sand)¹			610	700	--		0.6	60	55	55	30

Notes

mg/kg = milligrams per kilogram

ND = Not detected

-- = Cleanup level not available or sample not analyzed

TPHd = Total Petroleum Hydrocarbons as diesel

TPHg = Total Petroleum Hydrocarbons as gasoline

¹ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-3
Previously Detected Volatile and Semivolatile Organic Compounds in Soil
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Depth	Sample Date	1,4-Dichlorobenzene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene ¹	Benzo(a)pyrene ¹	Benzo(b)fluoranthene ¹	Benzo(g,h,i)perylene	Benzo(k)fluoranthene ¹	Benzyl alcohol ¹	Chrysene	Dibenzofuran	Fluoranthene
			Analytical Method	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg	EPA 8270C mg/kg
BBSB11	0	8/5/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB11	2	8/5/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB12	0	8/6/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB12	2	8/6/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB13	0	8/6/1992	--	--	--	< 0.2	< 0.2	< 0.2	< 0.2	--	< 0.2	--	< 1	--	< 0.4
BBSB13	2	8/6/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	0.044	--	< 0.22	--	0.11
BBSB14	0	8/7/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB14	2	8/7/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BBSB15	0	8/11/1992	--	--	--	< 0.033	0.06	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	0.2
BBSB15	2	8/11/1992	--	--	--	< 0.033	< 0.033	< 0.033	< 0.033	--	< 0.033	--	< 0.22	--	< 0.085
BB3SB100	0.5	7/17/2000	< 1.70	< 1.70	< 1.70	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	--	< 1.7	< 1.7
BB3SB100	1.5	7/17/00	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68	--	< 0.68	< 0.68
BB3SB101	0.5	7/17/00	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	--	< 0.34	< 0.34
BB3SB101	2	7/17/00	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	--	< 0.34	< 0.34
BB3SB102	0.5	7/17/00	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	--	< 0.35	< 0.35
BB3SB102	2	7/17/00	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	--	< 0.35	< 0.35
Cleanup Levels (Serpentinite) ³			--	30	30	30	0.27	0.027	0.27	30	0.27	1.0	2.7	910	30
Cleanup Levels (Colma) ³			--	30	30	30	0.27	0.027	0.27	30	0.27	1.0	2.7	910	30
Cleanup Levels (Beach/Dune Sand) ³			--	30	30	30	0.27	0.027	0.27	30	0.27	1.0	2.7	910	30

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available or sample not analyzed

¹ Some historical detection limits exceed the cleanup levels for the indicated constituents and numerous detection limits are below the cleanup levels. The isolated detections that occurred were well below the cleanup levels.

² Various other SVOCs and VOCs for which cleanup levels are not available were quantitated and not detected above reporting limits.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-3
Previously Detected Volatile and Semivolatile Organic Compounds in Soil
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Depth	Sample Date	Dibenzo(a,h)anthracene ¹										All Other SVOCs ²	1,1,1-Trichloroethane	1,4-Dichlorobenzene	Acetone	Carbon Disulfide	All Other VOCs ²		
			Fluorene			Indeno(1,2,3-cd)pyrene ¹		Naphthalene		Pentachlorophenol ¹		Phenanthrene		Phenol	Pyrene					
			EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C	EPA 8270C					
Unit	Analytical Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BBSB11	0	8/5/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	< 0.033	--	< 0.033	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB11	2	8/5/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	< 0.033	--	< 0.033	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB12	0	8/6/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	< 0.033	--	< 0.033	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB12	2	8/6/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	0.046	--	0.059	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB13	0	8/6/1992	< 0.2	< 0.2	< 0.2	--	< 1	0.3	--	0.6	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB13	2	8/6/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	0.097	--	0.11	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB14	0	8/7/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	< 0.033	--	0.06	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB14	2	8/7/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	0.078	--	0.084	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB15	0	8/11/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	0.21	--	0.35	ND	< 0.002	--	--	--	--	--	--	ND	
BBSB15	2	8/11/1992	< 0.033	< 0.033	< 0.033	--	< 0.2	< 0.033	--	< 0.033	ND	< 0.002	--	--	--	--	--	--	ND	
BB3SB100	0.5	7/17/2000	< 1.7	< 1.7	< 1.7	< 1.7	< 8.6	< 1.7	< 1.7	< 1.7	ND	< 0.002	< 0.006	< 0.024	< 0.006	--	--	--	ND	
BB3SB100	1.5	7/17/00	< 0.68	< 0.68	< 0.68	< 0.68	< 3.4	< 0.68	< 0.68	< 0.68	ND	< 0.002	< 0.005	< 0.020	< 0.005	--	--	--	ND	
BB3SB101	0.5	7/17/00	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 1.7	< 0.34	< 0.34	< 0.34	ND	< 0.002	< 0.006	< 0.022	< 0.006	--	--	ND	
BB3SB101	2	7/17/00	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 1.7	< 0.34	< 0.34	< 0.34	ND	< 0.002	< 0.006	< 0.022	< 0.006	--	--	ND	
BB3SB102	0.5	7/17/00	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 1.7	< 0.35	< 0.35	< 0.35	ND	< 0.002	< 0.006	< 0.024	< 0.006	--	--	ND	
BB3SB102	2	7/17/00	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 1.7	< 0.35	< 0.35	< 0.35	ND	< 0.002	< 0.005	< 0.022	< 0.005	--	--	ND	
Cleanup Levels (Serpentinite) ³		0.078	30	0.27	30	3.0	30	30	30	--	8.0	0.13	0.24	200	--					
Cleanup Levels (Colma) ³		0.078	30	0.27	30	3.0	30	30	30	--	8.0	0.13	0.24	200	--					
Cleanup Levels (Beach/Dune Sand) ³		0.078	30	0.27	30	3.0	30	30	30	--	8.0	0.13	0.24	200	--					

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available or sample not analyzed

¹ Some historical detection limits exceed the cleanup levels for the indicated constituents and numerous detection limits are below the cleanup levels. The isolated detections that occurred were well below the cleanup levels.

² Various other SVOCs and VOCs for which cleanup levels are not available were quantitated and not detected above reporting limits.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-4
Previously Detected Pesticides, Herbicides and PCBs in Soil
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Depth	Sample Date	2,4-D ¹	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin ¹	alpha-BHC	alpha-Chlordane	beta-BHC	Camphechlor	Chlordane	delta-BHC ¹	Dieldrin	Endosulfan I	Endosulfan II
			Analytical feet	EPA 8150 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg
BBSB11	0	8/5/1992	< 1	< 0.006	< 0.006	< 0.006	--	--	--	--	--	--	--	< 0.006	--	--
BBSB11	2	8/5/1992	< 1	< 0.006	< 0.006	< 0.006	--	--	--	--	--	--	--	< 0.006	--	--
BBSB12	0	8/6/1992	< 1	0.007	0.02	0.035	--	--	--	--	--	--	--	0.008	--	--
BBSB12	2	8/6/1992	< 1	< 0.006	< 0.006	0.014	--	--	--	--	--	--	--	0.006	--	--
BBSB13	0	8/6/1992	< 1	0.021	< 0.013	0.047	--	--	--	--	--	--	--	0.016	--	--
BBSB13	2	8/6/1992	< 1	0.007	< 0.013	< 0.013	--	--	--	--	--	--	--	0.009	--	--
BBSB14	0	8/7/1992	< 1	< 0.006	< 0.006	0.008	--	--	--	--	--	--	--	< 0.006	--	--
BBSB14	2	8/7/1992	< 1	< 0.006	< 0.006	0.006	--	--	--	--	--	--	--	< 0.006	--	--
BBSB15	0	8/11/1992	< 1	< 0.006	< 0.006	< 0.006	--	--	--	--	--	--	--	< 0.006	--	--
BBSB15	2	8/11/1992	< 1	< 0.006	< 0.006	0.006	--	--	--	--	--	--	--	< 0.006	--	--
BB3SB100	0.5	7/17/2000	--	0.0068	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	0.011	< 0.1	0.31	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB100	1.5	7/17/2000	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.1	0.11	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB100R	0.5	8/31/2000	--	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 1	--	< 0.030	0.088	< 0.030	< 0.030
BB3SB100R	1.5	8/31/2000	--	< 0.030	< 0.030	0.032	< 0.030	< 0.030	0.037	< 0.030	< 1	--	< 0.030	0.14	< 0.030	< 0.030
BB3SB101	0.5	7/17/2000	--	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	--	< 0.005	< 0.1	< 0.051	< 0.005	< 0.005	< 0.005	< 0.005
BB3SB101	2	7/17/2000	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.1	< 0.051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB101R	0.5	8/31/2000	--	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.030	< 0.0030	< 0.1	--	< 0.0030	< 0.0030	< 0.030
BB3SB101R	1.5	8/31/2000	--	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.030	< 0.0030	< 0.1	--	< 0.0030	< 0.0030	< 0.030
BB3SB102	0.5	7/17/2000	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.1	< 0.051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB102	2	7/17/2000	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.1	< 0.051	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB102R	0.5	8/31/2000	--	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.030	< 0.0030	< 0.1	--	< 0.0030	< 0.0030	< 0.030
BB3SB102R	1.5	8/31/2000	--	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.030	< 0.0030	< 0.1	--	< 0.0030	< 0.0030	< 0.030
Cleanup Levels (Serpentinite)³			0.025	0.049	0.098	0.0082	0.0039	0.062	0.0090	0.062	--	0.0090	0.062	0.030	1.1	1.1
Cleanup Levels (Colma)³			0.025	0.049	0.098	0.0082	0.0039	0.062	0.0090	0.062	--	0.0090	0.062	0.030	1.1	1.1
Cleanup Levels (Beach/Dune Sand)³			0.025	0.049	0.098	0.0082	0.0039	0.062	0.0090	0.062	--	0.0090	0.062	0.030	1.1	1.1

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

R = data rejected by laboratory

Bold indicates a detection limit above the cleanup level

Shading indicates a Contaminant of Concern

¹ Historical detection limits exceed one or more cleanup levels.

² Endrin is not retained as a COC because it was not detected in a statistically significant number of samples (EKI, 2003).

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-4
Previously Detected Pesticides, Herbicides and PCBs in Soil
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Depth	Sample Date	Endosulfan sulfate	Endrin ²	Endrin aldehyde	Endrin ketone	gamma-BHC	gamma-Chlordane	Heptachlor	Heptachlor epoxide	PCB-1254	PCB-1260, -1262, -1016, -1221, -1232, -1242, and -1248
	feet	Analytical Method	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg
BBSB11	0	8/5/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB11	2	8/5/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB12	0	8/6/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB12	2	8/6/1992	--	0.006	--	--	< 0.003	< 0.03	< 0.003	--	< 0.082 R	--
BBSB13	0	8/6/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	0.004	< 0.082 R	--
BBSB13	2	8/6/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB14	0	8/7/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB14	2	8/7/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	0.197	--
BBSB15	0	8/11/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BBSB15	2	8/11/1992	--	< 0.006	--	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.082 R	--
BB3SB100	0.5	7/17/2000	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB100	1.5	7/17/2000	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB100R	0.5	8/31/2000	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	--	--
BB3SB100R	1.5	8/31/2000	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	0.032	< 0.030	< 0.030	--	--
BB3SB101	0.5	7/17/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	--	< 0.005	< 0.005	< 0.005	< 0.005
BB3SB101	2	7/17/2000	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB101R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--
BB3SB101R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--
BB3SB102	0.5	7/17/2000	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB102	2	7/17/2000	< 0.0051	< 0.0051	< 0.0051	< 0.0051	< 0.0051	--	< 0.0051	< 0.0051	< 0.0051	< 0.0051
BB3SB102R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--
BB3SB102R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--
Cleanup Levels (Serpentinite)³			1.1	0.004	0.004	0.004	0.010	0.0090	0.017	0.017	0.033	0.033
Cleanup Levels (Colma)³			1.1	0.004	0.004	0.004	0.010	0.0090	0.017	0.017	0.033	0.033
Cleanup Levels (Beach/Dune Sand)³			1.1	0.004	0.004	0.004	0.010	0.0090	0.017	0.017	0.033	0.033

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

R = data rejected by laboratory

Bold indicates a detection limit above the cleanup level

Shading indicates a Contaminant of Concern

¹ Historical detection limits exceed one or more cleanup levels.

² Endrin is not retained as a COC because it was not detected in a statistically significant number of samples (EKI, 2003).

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-5
Previously Detected Inorganic Compounds in Surface Water
Baker Beach Disturbed Area 3
 Presidio of San Francisco, California

Sample ID	Date	Antimony	Arsenic	Barium	Beryllium ¹	Cadmium ¹	Chromium	Cobalt	Copper	Lead ¹	Mercury ¹	Molybdenum	Nickel	Selenium ¹	Silver ¹	Thallium ¹	Vanadium	Zinc
Analytical Method		SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 7470A ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	SW 6010B ug/L	
BB3SW100	5/1/2000	< 5	< 5	140	< 5	< 2	< 5	< 5	< 5	< 0.2	< 5	17	< 5	< 5	< 5	< 5	< 5	64
BB3SW190 ²	5/1/2000	< 5	< 5	150	< 5	< 2	< 5	< 5	< 5	< 0.2	< 5	18	< 5	< 5	< 5	< 5	< 5	76
Cleanup Levels³		6	10	1,000	4	1.1	50	--	11.8	3.2	0.012	--	100	5	4.1	2	--	106

Notes

µg/L = micrograms per liter

-- = Cleanup level not available or sample not analyzed

¹ All historical detection limits exceed cleanup level for the indicated constituents. However, they are not retained as COCs because they are not likely to have been released into the environment as a result of historical site uses (EKI, 2003).

In addition, 0.2 ug/L is the lowest available reporting limit for mercury.

² Sample BB3SW190 is a duplicate of BB3SW100.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-6
Previously Detected Petroleum and Related Compounds in Surface Water
Baker Beach Disturbed Area 3
 Presidio of San Francisco, California

Sample ID	Date	TPHg (C7-C12)	TPHd (C12-C24)	TPHmo (C24-C36)	Benzene	Ethylbenzene	m,p-xlenes	Ethylbenzene	m,p-Xlenes	Naphthalene	Toluene
Analytical Method		EPA 8015M ug/L	EPA 8015M ug/L	EPA 8015M ug/L	SW 8020 ug/L	SW 8020 ug/L	SW 8020 ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8020 ug/L
BB3SW100	5/1/2000	77	< 50	< 500	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5
BB3SW190 ¹	5/1/2000	< 50	< 50	< 500	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 1	< 0.5
Cleanup Levels ²		443	880	1,200	1.0	700	318	700	318	300	150

Notes

µg/L = micrograms per liter

¹ Sample BB3SW190 is a duplicate of BB3SW100.

² Cleanup levels are shown in Section 3.0 of the RAP.

Table E-7
Previously Detected Volatile Organic Compounds in Surface Water
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Date	1,1,1-Trichloroethane	1,2-Dichloroethane	1,2-Dichloropropane	1,4-Dichlorobenzene	Benzene	Bromodichloromethane	Carbon tetrachloride	Chlorobenzene	Chlorodibromo-methane ¹	Chloroform	Tetrachloro-ethene	Trichloroethylene	Vinyl Chloride	All Other VOCs ²
Analytical Method		SW 8260A ug/L	SW 8260A ug/L	8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	SW 8260A ug/L	8260A ug/L	SW 8260A ug/L	
BB3SW100	5/1/2000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
BB3SW190 ³	5/1/2000	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	ND
Cleanup Levels ⁴		200	0.5	--	5	1.0	80	0.5	70	0.4	80	5	5	--	--

Notes

µg/L = micrograms per liter

ND = Not detected; detection limits vary

-- = Cleanup level not available

¹ Historical detection limits exceed cleanup level for the indicated constituents.

² Thirty-six (36) other VOCs for which cleanup levels are not available were quantitated and not detected above reporting limits.

³ Sample BB3SW190 is a duplicate of BB3SW100.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-8
Previously Detected Semivolatile Organic Compounds in Surface Water
Baker Beach Disturbed Area 3
Presidio of San Francisco, California

Sample ID	Date Analytical Method	1,4-Dichlorobenzene	Benzo(a)anthracene	Benzo(a)pyrene ¹	Benzo(b)fluoranthene ¹	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Fluoro-anthene	Fluorene	Naphthalene	Pentachlorophenol ¹	Phen-anthrene	Phenol ¹	Pyrene	All other SVOCs ²
		SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	SW 8270A ug/L	
BB3SW100	5/1/2000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 10	< 2	< 2	< 2	ND
BB3SW190 ³	5/1/2000	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 5	< 2	< 10	< 2	< 2	< 2	ND
Cleanup Levels ⁴		5	770	0.1	0.2	0.2	150	2	300	300	1.0	230	1.0	230	--

Notes

mg/L = milligrams per liter

ND = Not detected; detection limits vary

-- = Cleanup level not available

¹ Historical detection limits exceed cleanup levels for the indicated constituents.

² Forty-five (45) other SVOCs for which cleanup levels are not available were quantitated and not detected above reporting limits.

³ Sample BB3SW190 is a duplicate of BB3SW100.

⁴ Cleanup levels are shown in Section 3.0 of the RAP.

Table E-9
Previously Detected Pesticides, Herbicides and PCBs in Surface Water
Baker Beach Disturbed Area 3
 Presidio of San Francisco, California

Sample ID	Date	1,1,1-Trichloroethane	4,4'-DDE	4,4'-DDT ¹	Aldrin	alpha-BHC	beta-BHC	Camphechlor	Chlordane ¹	Chloro-diphenyl	delta-BHC	Dieldrin ¹	Endosulfan I ¹	II ¹	Endosulfan Sulfate ¹	Endrin ¹	gamma-Aldehyde ¹	gamma-BHC	gamma-Chlordane ¹	Heptachlor ¹	Heptachlor Epoxide ¹	PCB-1016, -1221, -1232, -1242, -1248, -1254, and -1260
		SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8081 ug/L	SW 8082 ug/L	
BB3SW100	5/1/2000	< 0.2	< 0.08	< 0.2	< 0.08	< 0.06	< 0.06	< 1	< 1	< 0.5	< 0.06	< 0.06	< 0.1	< 0.1	< 0.2	< 0.4	< 0.2	< 0.06	< 1	< 0.06	< 0.1	< 0.5
BB3SW190 ²	5/1/2000	< 0.2	< 0.08	< 0.2	< 0.08	< 0.06	< 0.06	< 1	< 1	< 0.5	< 0.06	< 0.06	< 0.1	< 0.1	< 0.2	< 0.4	< 0.2	< 0.06	< 1	< 0.06	< 0.1	< 0.5
Cleanup Level ³		200	--	0.001	--	--	0.3	--	0.0043	--	--	0.056	0.056	0.056	0.056	0.036	0.036	0.2	0.0043	0.0038	0.0038	0.014

Notes

ug/L = micrograms per liter

-- = Cleanup level not available

¹ Historical detection limits exceed cleanup level for the indicated constituents.

² Sample BB3SW190 is a duplicate of BB3SW100.

³ Cleanup levels are shown in Section 3.0 of the RAP.

APPENDIX F
Previous Soil Investigation Results
Baker Beach Disturbed Area 4

Table F-1
Previously Detected Inorganic Compounds in Soil
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Sample ID	Depth feet	Sample Date Analytical Method	Aluminum	Antimony ¹	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt ²	Copper	Cyanide	Iron	Lead
			EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg	9010 mg/kg	EPA 6010/B mg/kg	EPA 6010/B mg/kg
BBSB16	0	8/3/1992	8,700	< 41.3	2.86	72.5	0.643	0.779	9,900	42.4	29.6	26.6	< 0.92	21,000	240
BBSB16	2	8/3/1992	6,700	< 41.3	3.28	43.1	< 0.5	< 0.515	6,400	28.8	21.4	15.8	< 0.92	15,000	180
BBSB17	0	8/5/1992	4,340	< 41.3	3.13	17.1	0.567	< 0.515	5,010	42.1	6.7	4.75	< 0.92	12,000	20
BBSB17	2	8/5/1992	3,950	< 41.3	3.53	14.8	0.551	< 0.515	3,120	37	16.3	5.61	< 0.92	9,800	2.94
BBSB18	0	8/3/1992	6,200	< 41.3	2.62	47.5	0.687	0.542	4,810	51.4	27.7	15.4	< 0.92	18,000	54
BBSB18	2	8/3/1992	4,750	< 41.3	2.54	9.88	< 0.5	< 0.515	3,720	49.9	16.9	5.28	< 0.92	11,000	4.17
BBSB19	0	8/5/1992	4,180	< 41.3	2.48	19.9	< 0.5	< 0.515	5,100	33.2	15.2	7.69	< 0.92	6,000	22
BBSB19	2	8/5/1992	5,070	< 41.3	2.96	26.5	0.554	< 0.515	3,210	42	18.2	7.57	< 0.92	11,000	4.86
BBSB20	0	8/5/1992	4,990	< 41.3	3.09	26	0.551	< 0.515	4,140	36.7	17.9	11.3	< 0.92	11,000	160
BBSB20	2	8/5/1992	4,900	< 41.3	2.55	18	< 0.5	< 0.515	3,690	44.4	19.5	7.29	< 0.92	12,000	21
BB4SB100	0.5	7/17/2000	--	< 2.9	2.6	37	0.16	1.4	--	27	6.3	11	--	--	49
BB4SB100	2	7/17/2000	--	< 3	2.5	36	0.15	1.2	--	29	6.1	9.8	--	--	39
BB4SB101	0.5	7/17/2000	--	< 3	2.6	25	0.13	0.94	--	28	5	4.7	--	--	14
BB4SB101	2	7/17/2000	--	< 3	2.4	8.8	0.12	0.82	--	26	4.3	2.6	--	--	3.4
BB4SB102	0.5	7/17/2000	--	< 3	2.4	28	0.13	0.9	--	24	4.5	6	--	--	27
BB4SB102	2	7/17/2000	--	< 2.9	2.6	18	0.12	0.84	--	24	4.5	3.5	--	--	5.3
Cleanup Levels (Beach/Dune Sand)³			--	5.0	5.9	320	10	1.7	--	120	20	43	1,000	--	160

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

Bold indicates a detection above cleanup level

Shading indicates Contaminant of Concern

R = Rejected data (EKI, 2001a)

¹ All historical detection limits for samples collected from the western portion of the site exceed cleanup level for antimony.

² The cobalt results that exceed cleanup levels appear to be an artifact of the laboratory performing the analysis. Therefore, cobalt is not retained as a COC (EKI, 2003).

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table F-1
Previously Detected Inorganic Compounds in Soil
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Sample ID	Depth	Sample Date	Magnesium EPA 6010/B	Manganese EPA 6010/B	Mercury EPA 6010/B	Molybdenum EPA 6010/B	Nickel EPA 6010/B	Potassium EPA 6010/B	Selenium EPA 6010/B	Silver EPA 6010/B	Sodium EPA 6010/B	Thallium EPA 6010/B	Vanadium EPA 6010/B	Zinc EPA 6010/B
	feet	Analytical Method	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BBSB16	0	8/3/1992	5400 R	408 R	0.067	--	50.8	766 R	< 0.25	1.16	216	68.9 R	49.5	172
BBSB16	2	8/3/1992	4070 R	329 R	0.076	--	34.7	494 R	< 0.25	0.813	160	54.9 R	36.5	90.7
BBSB17	0	8/5/1992	2280 R	158 R	< 0.027	--	21	532 R	< 0.25	0.582	170	52.2 R	45.8	28.7
BBSB17	2	8/5/1992	1970 R	126 R	< 0.027	--	20.8	325 R	< 0.25	0.778	157	30.9 R	32.2	18.6
BBSB18	0	8/3/1992	3150 R	306 R	< 0.027	--	34.4	602 R	< 0.25	1.04	138	68 R	51.6	56.7
BBSB18	2	8/3/1992	2100 R	134 R	< 0.027	--	25.7	321 R	< 0.25	< 0.521	125	36.3 R	35.8	19.3
BBSB19	0	8/5/1992	2200 R	164 R	< 0.027	--	21.1	439 R	< 0.25	0.71	205	29.4 R	29.1	49
BBSB19	2	8/5/1992	2410 R	186 R	< 0.027	--	27.5	392 R	< 0.25	0.755	157	34.9 R	34.4	25.9
BBSB20	0	8/5/1992	2340 R	180 R	< 0.027	--	24.7	507 R	< 0.25	0.79	161	35.2 R	34	61.9
BBSB20	2	8/5/1992	2270 R	160 R	< 0.027	--	24.2	437 R	< 0.25	0.805	176	39.2 R	40.3	31.8
BB4SB100	0.5	7/17/2000	--	--	< 0.02	< 0.98	27	--	< 0.24	< 0.24	--	0.33 R	25	51
BB4SB100	2	7/17/2000	--	--	< 0.02	< 1	26	--	< 0.25	< 0.25	--	0.33	23	37
BB4SB101	0.5	7/17/2000	--	--	< 0.02	< 0.99	22	--	< 0.25	< 0.25	--	< 0.25	20	29
BB4SB101	2	7/17/2000	--	--	< 0.02	< 1	21	--	< 0.25	< 0.25	--	< 0.25	18	14
BB4SB102	0.5	7/17/2000	--	--	0.022	< 1	21	--	< 0.25	< 0.25	--	< 0.25	19	31
BB4SB102	2	7/17/2000	--	--	< 0.02	< 0.98	22	--	< 0.25	< 0.25	--	< 0.25	17	29
Cleanup Levels (Beach/Dune Sand)³			--	--	0.4	12	70	--	0.75	2.0	--	1.0	92	66

Notes

mg/kg = milligrams per kilogram

-- = Cleanup level not available or sample not analyzed

Bold indicates a detection above cleanup level

Shading indicates Contaminant of Concern

R = Rejected data (EKI, 2001a)

¹ All historical detection limits for samples collected from the western portion of the site exceed cleanup level for antimony.

² The cobalt results that exceed cleanup levels appear to be an artifact of the laboratory performing the analysis. Therefore, cobalt is not retained as a COC (EKI, 2003).

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table F-2
Previously Detected Petroleum and Related Compounds in Soil
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Sample ID	Depth feet	Sample Date Analytical Method	TPHg	TPHd	Benzene	Ethylbenzene	Naphthalene	Toluene	Xylenes (total)
			EPA 8015M mg/kg	EPA 8015M mg/kg	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg	SW8260 mg/kg
BBSB16	0	8/3/1992	< 1	80	< 0.002	< 0.002	< 0.2	< 0.002	< 0.002
BBSB16	2	8/3/1992	< 1	140	< 0.002	< 0.002	< 0.2	< 0.002	< 0.002
BBSB17	0	8/5/1992	< 1	12	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB17	2	8/5/1992	< 1	8	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB18	0	8/3/1992	< 1	20	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB18	2	8/3/1992	< 1	3	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB19	0	8/5/1992	< 1	11	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB19	2	8/5/1992	< 1	8	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB20	0	8/5/1992	< 1	13	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
BBSB20	2	8/5/1992	< 1	7	< 0.002	< 0.002	< 0.033	< 0.002	< 0.002
Cleanup Levels (Beach/Dune Sand)¹			610	700	0.6	60	30	270	55

Notes

mg/kg = milligrams per kilogram

TPHd = Total Petroleum Hydrocarbons as diesel

TPHg = Total Petroleum Hydrocarbons as gasoline

¹ Cleanup levels are shown in Section 3.0 of the RAP.

Table F-3
Previously Detected Pesticides, Herbicides and PCBs in Soil
Baker Beach Disturbed Area 4
 Presidio of San Francisco, California

Sample ID	Depth	Sample Date	1,1,1-Trichloroethane	4,4'-DDD	4,4'-DDE	4,4'-DDT ¹	Aldrin ¹	alpha-BHC	beta-BHC	Camphechlor	Chlordane ¹	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin ¹	Endrin aldehyde ¹
			Analytical Method	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	
BBSB16	0	8/3/1992	--	< 0.06	< 0.06	0.06	< 0.03	< 0.03	< 0.03	--	--	< 0.03	< 0.06	< 0.03	< 0.06	< 0.06	< 0.06	
BBSB16	2	8/3/1992	--	< 0.06	< 0.06	0.1	< 0.03	< 0.03	< 0.03	--	--	< 0.03	< 0.06	< 0.03	< 0.06	< 0.06	< 0.06	
BBSB17	0	8/5/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB17	2	8/5/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB18	0	8/3/1992	--	< 0.06	< 0.06	< 0.060	< 0.03	< 0.03	< 0.03	--	--	< 0.03	< 0.06	< 0.03	< 0.06	< 0.06	< 0.06	
BBSB18	2	8/3/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB19	0	8/5/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB19	2	8/5/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB20	0	8/5/1992	--	< 0.006	< 0.006	0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BBSB20	2	8/5/1992	--	< 0.006	< 0.006	< 0.006	< 0.003	< 0.003	< 0.003	--	--	< 0.003	< 0.006	< 0.003	< 0.006	< 0.006	< 0.006	
BB4SB100	0.5	7/19/2000	< 0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	< 0.1	< 0.050	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB100	2	7/19/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1	< 0.050	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB100R	0.5	8/31/2000	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.5	--	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	
BB4SB100R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.1	--	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
BB4SB101	0.5	7/19/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1	< 0.050	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB101	2	7/19/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1	< 0.051	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB101R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.1	--	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
BB4SB101R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.1	--	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
BB4SB102	0.5	7/19/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1	< 0.051	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB102	2	7/19/2000	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.1	< 0.051	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
BB4SB102R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.1	--	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
BB4SB102R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.1	--	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
Cleanup Levels (Beach/Dune Sand)³			8.0	0.049	0.098	0.0082	0.0039	0.062	0.062	--	0.0090	0.062	0.030	1.1	1.1	1.1	0.004	0.004

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available or sample not analyzed

Bold indicates detection above cleanup level

Shading indicates Contaminant of Concern

¹ Historical detection limits exceed cleanup level.

² Nine additional pesticides for which no cleanup level have been established were quantitated; none were present above cleanup levels.

³ Cleanup levels are shown in Section 3.0 of the RAP.

Table F-3
Previously Detected Pesticides, Herbicides and PCBs in Soil
Baker Beach Disturbed Area 4
Presidio of San Francisco, California

Sample ID	Depth feet	Sample Date Analytical Method	Endrin ketone ¹	gamma-BHC	gamma-Chlordane ¹	Heptachlor epoxide	Methoxychlor	PCB-1016 ¹	PCB-1221 ¹	PCB-1232 ¹	PCB-1242 ¹	PCB-1248 ¹	PCB-1254 ¹	PCB-1260 ¹	Toxaphene	Dicamba ¹	All Other Pesticides ²	
			SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8080 mg/kg	SW 8150 mg/kg	SW 8080 mg/kg	
BBSB16	0	8/3/1992	--	< 0.03	0.4	< 0.03	< 0.03	< 0.3	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.6	< 1	ND
BBSB16	2	8/3/1992	--	< 0.03	0.3	< 0.03	< 0.03	< 0.3	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.6	< 1	ND
BBSB17	0	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB17	2	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB18	0	8/3/1992	--	< 0.03	< 0.3	< 0.03	< 0.03	< 0.3	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.6	< 1	ND
BBSB18	2	8/3/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB19	0	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB19	2	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB20	0	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BBSB20	2	8/5/1992	--	< 0.003	< 0.03	< 0.003	< 0.003	< 0.03	< 0.067	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082	< 0.08	< 0.06	< 1	ND
BB4SB100	0.5	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	--	ND
BB4SB100	2	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	--	ND
BB4SB100R	0.5	8/31/2000	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	--	--	--	--	--	--	--	--	--	ND
BB4SB100R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--	--	--	--	--	--	--	--	ND
BB4SB101	0.5	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	ND
BB4SB101	2	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	ND
BB4SB101R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--	--	--	--	--	--	--	--	ND
BB4SB101R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--	--	--	--	--	--	--	--	ND
BB4SB102	0.5	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	ND
BB4SB102	2	7/19/2000	< 0.005	< 0.005	--	< 0.005	< 0.005	< 0.005	--	--	--	--	--	--	--	--	--	ND
BB4SB102R	0.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--	--	--	--	--	--	--	--	ND
BB4SB102R	1.5	8/31/2000	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	--	--	--	--	--	--	--	--	--	ND
Cleanup Levels (Beach/Dune Sand)³			0.004	0.010	0.0090	0.017	0.017	0.44	0.033	0.033	0.033	0.033	0.033	0.033	0.033	--	0.01	--

Notes

mg/kg = milligrams per kilogram

ND = Not detected; detection limits vary

-- = Cleanup level not available or sample not analyzed

Bold indicates detection above cleanup level

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¹ Historical detection limits exceed cleanup level.

² Nine additional pesticides for which no cleanup level have been established were quantitated; none were present above cleanup levels.

³ Cleanup levels are shown in Section 3.0 of the RAP.